Seymour College

English Work Pack 2021

Year 10 Number 2 Term 4.

Instructions to Students:

Learning Intention	**Success Criteria**
• To develop debating skills	I can: • Know a topic in detail • Express my position – with evidence • Employ persuasive techniques • Rebut my opponent

Week 1

Lesson	
1	What is a debate?
2	Researching my topic
3	Researching my topic
4	Researching my topic

Week 2

Lesson	
5	Being Assigned my topic
6	How Can I be persuasive?
7	Developing my talking points
8	Develop my talking points.

Notes to Parents/Guardians:

You can support your child to complete their work at home by:

- Encouraging them to allocate time for specific subjects
- Reading the material and talking about the ideas with your child (where possible)
- Checking in with your child to ask how they are going
- Contacting Teachers if more support or explanation is required

Submission of Work and Feedback:

Students can upload work to Compass where access is available. Photos of handwritten tasks may also be uploaded. Students can also mail hard copies of their work back to the school in the supplied envelope.

Students and parents can continue to communicate with Teachers via Compass email. Any questions should be directed to the school email: seymour.co@education.vic.gov.au

Week 3

Lesson 1

	Approx. Time	**Learning Intention:** What is a debate? **Success Criteria:** I can -	
First	5 minutes	Log in to your WebEx (Mr. Webster definitely running one on Monday)	Tick when completed:
Next	15 minutes	Go over the basic debate structure. Your teacher might go over this in the WebEx. There are written instructions on pages 6 and 7 if you can't go. And this video might help as well (4 minutes) https://www.youtube.com/watch?v=K-yfiDrN4OA	
Then	30 minutes	**Watch this example of a debate** (it is not the whole thing, just watch the first **15 minutes** – context and the first two speakers.) https://www.youtube.com/watch?v=iMEwVXv2aQc (Arirang Issue, 2017 *'[Intelligence-High School Debate] Governments should provide a universal basic income _ Part.1')* If you can't watch the video, use the transcript on **Page 10.** **Answer these questions:** 1. *What is the topic/ resolution that is being debated?* 2. *How does the first speaker start the debate?* 3. *How is her speech persuasive?* 4. *How does he second speaker make it clear she is replying to the first?* 5. *How is her speech persuasive?* 6. *Discuss the construction of their speeches – is the language really formal or informal? Is it really complicated or a mix?*	
Last	5 minutes	The next three lessons will be about RESEARCH. So you need to fill in the research planners, pages 8 (or take notes how you see fit.)	

Lesson 2

	Approx. Time	**Learning Intention:** to be an expert in my topic. **Success Criteria:** I can - Learn everything I can about my topic - Sort my information into arguments that are 'for' and 'against' - Remember NOT to pick a side.	
First	5 minutes	Over the next three lessons you are going to do research about all the available topics. You get to pick which order, but you must become your best expert in all 5. This will take a long time, so we have been pretty generous.	Tick when completed:
Next	10 minutes	1. Parental support essential for the future success of children. 2. All cars should become electric. 3. Year-round education is a bad practise. 4. Every citizen should be mandated to perform national public service. 5. Bitcoin and other cryptocurrencies should be banned.	
Then	35 minutes	Work through my first topic Fill in a research scaffold.	
Last	35 minutes	Work through my second topic.	

		Fill in a research scaffold – You can copy and paste the table if you're on the computer, or make a new one in your workbook.	

Lesson 3

	Approx. Time	**Learning Intention:** to be an expert in my topic. **Success Criteria:** I can - Learn everything I can about my topic - Sort my information into arguments that are 'for' and 'against' - Remember NOT to pick a side.	
First	1 minutes	Tick of which topic I have already researched.	Tick when completed:
Next	1 minutes	Select which two I need to learn about today. 1. Parental support essential for the future success of children. 2. All cars should become electric. 3. Year-round education is a bad practise. 4. Every citizen should be mandated to perform national public service. 5. Bitcoin and other cryptocurrencies should be banned.	
Then	35 minutes	Work through my third topic. Fill in a research scaffold – You can copy and paste the table if you're on the computer, or make a new one in your workbook.	
Last	35 minutes	Work through my fourth topic. Fill in a research scaffold – You can copy and paste the table if you're on the computer, or make a new one in your workbook.	

Lesson 4

	Approx. Time	**Learning Intention:** to be an expert in my topic. **Success Criteria:** I can - Learn everything I can about my topic - Sort my information into arguments that are 'for' and 'against' - Remember NOT to pick a side.	
First	5 minutes	Tick off which topics I have already researched.	Tick when completed:
Next	10 minutes	Pick today's first topic. 1. Parental support essential for the future success of children. 2. All cars should become electric. 3. Year-round education is a bad practise. 4. Every citizen should be mandated to perform national public service. 5. Bitcoin and other cryptocurrencies should be banned.	
Then	35 minutes	Work through the fifth topic. Fill in a research scaffold – You can copy and paste the table if you're on the computer, or make a new one in your workbook.	
Last	35 minutes	Research any of the other topics a bit more. Fill in a research scaffold – You can copy and paste the table if you're on the computer, or make a new one in your workbook.	

Week 4

Lesson 5

	Approx. Time	**Learning Intention:** How Can I be persuasive? **Success Criteria:** I can - Identify sentences starters - Discuss why an approach used was good or bad.	
First	5 minutes	Log in to your WebEx (Mr. Webster definitely running one on Monday)	Tick when completed:
Next	10 minutes	Be sorted into your groups! Today you will be set your respective topics and which side you are on! If you did not go to your WebEx check your email. Your group and side will have been decided for you.	
Then	15 minutes	Hopefully your break-out groups are working. Otherwise try and email your teammates. Share all your research and points together. Map out who will cover what points, and in what order you think will work best. You get 2 minutes each to speak, so aim to have 2 or 3 small supporting arguments.	
Last	20 minutes	Make a list of counter-points that the opposite team might use to undermine you. It is important for the rebuttal phase of the debate to be prepared!	

Lesson 6

	Approx. Time	**Learning Intention:** What does a debate *read* like? **Success Criteria:** I can - Identify the arguments and persuasive approaches used by the speakers. - Use their example to structure my writing.	
First	5 minutes	You have been provided with a persuasive devices table on page _ And an example transcript on pages 10 through 11. **Read through the example** transcript from former United States President Barack Obama and his opponent Senator Mitt Romney.	Tick when completed:
Next	10 minutes	**Answer the following questions:** 1. Identify the arguments used by Former President Obama 2. Identify 2 persuasive devices he used. The table will help you. 3. Explain why you think he chose this combination of argument and device, as in why was this a good persuasive device. 4. Identify the arguments used by Senator Romney. 5. Identify 2 persuasive devices he used. Explain why this combination might be persuasive.	
Then	30 minutes	Highlight some of the **sentence starters** that each present used, that you might use in your speech.	
Last	5 minutes	If you have a bit of time, dot-point some information you might use to support the points you've decided on in your team meeting. You might also dot-point some research questions.	

Lesson 7

	Approx. Time	**Learning Intention:** Developing my talking points **Success Criteria:** I can - Develop a speech template. - Deliberately use persuasive devices in my speech - Sure up my ideas with research.	
First	5 minutes	Find your original research sheet for this topic. Using that information dot-point some information you might use to support the points your decided on in your team. Also dot-point some research questions.	Tick when completed:
Next	30 minutes	If you need it: Conduct more thorough research to help back-up your talking points. You might want a stronger statistics, or a better case-study.	
Then	30 minutes	Start writing the speech for your part of the debate. Yes, you should write a full speech for your sections. There is a scaffold on **page 14 and 15.**	
Last	5 minutes	Press SAVE!!	

Lesson 8

	Approx. Time	**Learning Intention:** Developing my talking points **Success Criteria:** I can - Develop a speech template. - Deliberately use persuasive devices in my speech - Sure up my ideas with research.	
First	5 minutes	Check in with your team mates if you can.	Tick when completed:
Next	45 minutes	Keep writing your speech.	
Last	5 minutes	Submit your work to the Learning Task 'Week 4 Work!!'	

Conducting a Debate

A debate is a discussion about an issue. A formal debate involves two sides: one supporting a resolution (Solution to the issue) and one opposing it. A debate is bound by rules. Debates have a winning side. You can still get a high mark on your CAT **even if your team does not win.** In the real world debates are how people make big decisions – for example parliament or big companies. No one person is in charge in democratic societies (That is what democratic means – to share and find a fix)

Structure for Debate

A formal debate involves three groups: one supporting the solution (affirmative team), one opposing the resolution (opposing team), and the judges. The affirmative and opposing teams usually have three members each. The audience will be our judges and decide who wins, the teacher will decide your grade.

Debate Preparation:

- Pick a topic or action to debate doing or not doing.
- Organize the teams (The teacher will pick your teams)
- Research the topic and prepare logical arguments **with evidence.**
- Anticipate counter arguments and prepare rebuttals.

• Work as a team to decide who goes first, second and third and what points they will cover.

• Make sure to pick a strong person to prepare your rebuttals – they are usually live!

Conducting Debate:

A debate goes back and forth between affirmative and opposing team members. The affirmative speaker always goes first, then the first opposing speaker and so on and so forth. At the end each team gets a chance to present a rebuttal to any points made by their opponents – in this case the opposition start. So:

• 1st affirmative speaker presents arguments in support of the resolution. (1-2 minutes)

• 1st opposition presents arguments opposing the resolution. (1-2 minutes)

• The second speaker on the affirmative team presents further arguments in support of the resolution, identifies areas of conflict, and answers questions that may have been raised by the opposition speaker. (1-2 minutes)

• The second speaker on the opposing team presents further arguments against the resolution, identifies further areas of conflict, and answers questions that may have been raised by the previous affirmative speaker. (1-2 minutes)

• The third speaker on the affirmative presents their final arguments (1-2 minutes)

• The third speaker on the opposing team present their final arguments. (1-2 minutes)

• The rules may include a short recess for teams to prepare their rebuttals. (5 minutes)

• The opposing team begins with the rebuttal, attempting to defend the opposing arguments and to defeat the supporting arguments without adding any new information. (1-2 minutes)

• First rebuttal of the affirmative team (1-2 minutes)

• Each team gets a second rebuttal for closing statements with the affirmative team having the last opportunity to speak. (3 – 5 minutes each)

There cannot be any interruptions. Speakers must wait their turns. The teacher may need to enforce the rules. This should take about **25 minutes, total.**

Post-debate Discussion and Assessment

Normally when a debate finishes the audience will get a chance to ask questions, this will be up to your teacher depending on class time.

The class will get to vote on who won the debate by a show of hands.

One more tip:

You and your team should have a clear statement about what your position is.

You and your team mates should NOT have the same arguments, try to put them in the best order you can. It is a good idea to end on a strong/ engaging argument for the audience.

Share your resources – this is how you will know what to rebut.

Research Scaffold 1.

The topic this research is for:	
What I already know about the topic is:	
Arguments that support	Argument Against
The websites & Video links I went to:	

Debate Rough Plan Fill this out based on which position you have in your team.

The position my team is taking is:	
My team mates are:	
We are the OPPOSITION/ AFFIRMATIVE (Select one)	
I am position number:	1, 2 or 3.
My first point is:	
My evidence/ Example:	
My second point is:	
My evidence/ example:	
Thank you.	

October 3, 2012 Debate Transcript

PRESIDENT BARACK OBAMA AND FORMER GOV. MITT ROMNEY, R-MASS., PRESIDENTIAL CANDIDATE, PARTICIPATE IN A CANDIDATES DEBATE, UNIVERSITY OF DENVER, COLORADO

LEHRER: You have two minutes. Each of you have two minutes to start. A coin toss has determined, Mr. President, you go first.

OBAMA: Well, thank you very much, Jim, for this opportunity. I want to thank Governor Romney and the University of Denver for your hospitality.

There are a lot of points I want to make tonight, but the most important one is that 20 years ago I became the luckiest man on Earth because Michelle Obama agreed to marry me.

And so I just want to wish, Sweetie, you happy anniversary and let you know that a year from now we will not be celebrating it in front of 40 million people.

(LAUGHTER)

You know, four years ago we went through the worst financial crisis since the Great Depression. Millions of jobs were lost, the auto industry was on the brink of collapse. The financial system had frozen up.

And because of the resilience and the determination of the American people, we've begun to fight our way back. Over the last 30 months, we've seen 5 million jobs in the private sector created. The auto industry has come roaring back. And housing has begun to rise.

But we all know that we've still got a lot of work to do. And so the question here tonight is not where we've been, but where we're going.

Governor Romney has a perspective that says if we cut taxes, skewed towards the wealthy, and roll back regulations, that we'll be better off. I've got a different view.

I think we've got to invest in education and training. I think it's important for us to develop new sources of energy here in America, that we change our tax code to make sure that we're helping small businesses and companies that are investing here in the United States, that we take some of the money that we're saving as we wind down two wars to rebuild America and that we reduce our deficit in a balanced way that allows us to make these critical investments.

Now, it ultimately is going to be up to the voters — to you — which path we should take. Are we going to double on top-down economic policies that helped to get us into this mess or do we embrace a new economic patriotism that says America does best when the middle class does best? And I'm looking forward to having that debate.

LEHRER: Governor Romney, two minutes.

ROMNEY: Thank you, Jim. It's an honor to be here with you, and I appreciate the chance to be with the president. I'm pleased to be at the University of Denver, appreciate their welcome, and also the Presidential Commission on these debates.

And congratulations to you, Mr. President, on your anniversary. I'm sure this was the most romantic place you could imagine, here — here with me. So I...

(LAUGHTER)

Congratulations.

This is obviously a very tender topic. I've had the occasion over the last couple of years of meeting people across the country. I was in Dayton, Ohio, and a woman grabbed my arm and she said, "I've been out of work since May. Can you help me?"

Ann yesterday was at a rally in Denver and a woman came up to her with a baby in her arms and said, "Ann, my husband has had four jobs in three years, part-time jobs. He's lost his most recent job and we've now just lost our home. Can you help us?"

And the answer is, yes, we can help, but it's going to take a different path. Not the one we've been on, not the one the president describes as a top-down, cut taxes for the rich. That's not what I'm going to do.

My plan has five basic parts. One, get us energy independent, North American energy independent. That creates about 4 million jobs.

Number two, open up more trade, particularly in Latin America. Crack down on China, if and when they cheat.

Number three, make sure our people have the skills they need to succeed and the best schools in the world. We're far away from that now.

Number four, get to us a balanced budget.

Number five, champion small business. It's small business that creates the jobs in America, and over the last four years, small business people have decided that America may not be the place to open a new business because new business startups are down to a 30-year low.

ROMNEY: Now, I'm concerned that the path that we're on has just been unsuccessful. The president has a view very similar to the view he had when he ran four years, that a bigger government, spending more, taxing more, regulating more — if you will, trickle-down government — would work.

That's not the right answer for America. I'll restore the vitality that gets America working again. Thank you.

Research Materials:

Topic 1 – Article 1.

Sep 19, 2018,01:53pm EDT

How To Handle Your Family's Resistance To Your Growing Success, by Kathy Caprino

Achieving great success but feeling unsupported by family can be a deep challenge

PHOTO: ISTOCK

Frequently in the career and leadership coaching work I do with professionals, my clients bring up difficult situations they faced within their families that left emotional scars. Often, there are active remnants from the past of pain, insecurity, and helplessness, and if they haven't done the deep internal work to heal that pain, it's carried forward for many years afterward.

One common challenge I've seen occurs when families respond negatively to a member's growing wealth and success. Families who've struggled to earn enough money or have stayed stagnant in their mindset can often feel left behind by a member who's gone on to be extremely successful. And the family's lack of understanding or support is often very difficult for the individual to deal with.

To learn more about this dynamic and how to overcome it, I caught up with Jeremy Adams. Jeremy grew up in a trailer park, spending his childhood in a poor neighborhood with no expectation that he'd grow up to reach any level of financial success. Jeremy is now a 2018 Forbes 30 Under 30 recipient and the founder of several companies including the world's largest food truck manufacturer Prestige Food Trucks and a $6 million company with *Shark Tank*'s Kevin Harrington. Jeremy is currently the cofounder of Unicorn Innovations.

Adams shared openly with me that, as he continues to grow as an entrepreneur, his family has been resistant to his expanding success. He's shared that "I feel they not only don't understand what I do in my work, but they also don't seem to appreciate the work I've done to achieve success. And they neglect to understand the lifestyle I've adopted as a successful entrepreneur."

Adams offers powerful advice and strategies for overcoming strained family relationships so you can shift your mindset and move forward to your highest potential without being burdened by guilt. Below, he shares openly about growing up around money struggles and how he overcame his challenges.

Kathy Caprino: What was it like to grow up deeply struggling financially?

Jeremy Adams: For me, it was actually rather normal, and I didn't know any better until maybe middle school. I started noticing kids having nicer material items than me, nicer houses than me, families took more trips, etc. It started making me really insecure to invite people over and introduce them to my family and see where I lived, especially when it came to any girls I was interested in. I got my first job right when I turned 16 at Bob Evans. I was very money-motivated years after. I thought money would make me happier, more confident, get the girls, etc.

Looking back at it now, I realize that biggest strain was that money controlled a lot of our household. My family lived much of their life chasing money and working week to week, never actually getting ahead. My step dad finished his degree and became a teacher when I was in high school, so things did improve a bit, but the "poor" mindset was ingrained at that point. I got caught in a trap of comparing myself to others which NEVER will have a good outcome.

The initial motivating factor for me wanting wealth /earning income was just to have nicer things than my "peers" so I didn't feel as bad about myself. I realized a couple years into my first business that no matter what level I reached, there are still always going to be more successful people, with nicer things. In one of my favorite newer books, *12 Rules For Life*, Jordan Peterson recommends that you never compare yourself to others, only compare yourself to who you were yesterday.

Caprino: What was it like to grow up in a neighborhood and surrounding area with little wealth or aspirations?

Adams: That's one of the reasons being poor was normal. Having any type of wealth was almost just a fairytale to me. No one in my family was close to anyone with wealth. My grandfather on my father's side has had a small animal feed store for many years, and did okay, but we never really talked with him and haven't seen him now in probably five years. Access to information was what set me apart, as well as the confidence that I could achieve what I put my mind to.

As far back as I can remember, I'd just tell my family I was going to be rich. And as mentioned, at that time, my motivating factor for being rich was basically to live a more quality life when it came to materials, restaurants, vacations, or similar. At 28 years old, I still have not reached all of my financial goals, but I don't have to work by necessity because I have built a basic level of financial security. Year by year, I am able to be more selective with my time and take on opportunities that get me excited. I am not 100% sure about what my exact purpose is in life, but I know I get the most joy and happiness out of helping others reach their business dreams. I believe anyone can achieve what they put their mind too.

Caprino: How different are your current surroundings from when you were a child?

Adams: As a child, I remember just a normal life. Watching a lot of TV, eating junk food, and being told to do my homework. I didn't really have a reason why, just that it was important to do it, and I'd get in a lot of trouble if I didn't. I just went through the motions.

Now, my life is that of growth, freedom and choices. I am reading at least two books a month. I travel the world. I work with multiple coaches the help me grow in all areas of life. I have launched multiple businesses. I am focused on generating wealth because it allows me to live a more stress- free life and follow my purpose and passions. Some of which I am still gaining clarity on, but I am determined to gain 100% clarity.

Caprino: What do you have in common with your family? What did/do you talk about with your family members – then and now?

Adams: My parents got divorced when I was two years old. I lived with my mom and step dad and rarely saw my father most of my life, although we did talk on the phone. He's a baseball fan like me, so we always talked baseball on the phone. As far as my mom and step dad are concerned, we always got along well, but never had a lot in common. In 2018, its mostly me trying to motivate them to make large changes and improvements in their life. Because I know they are capable of achieving anything they want. They occasionally ask me what I'm up to, which to me feels like they are living somewhat vicariously through me.

Caprino: What do you agree/disagree with regarding your family?

Adams: The main thing is mindset. Most people, including most of my family, are great at pointing out problems, and rarely coming up with and acting upon solutions. Can't pay the bills? Come up with ways to earn more money. Upset with certain areas of life? Read a book or learn from an expert on how to fix it. Hate your job? Hang around people that love their careers and learn from them.

These solutions seem basic to me, but many people just complain and never take action. This is what I have really been preaching. Overall, I had a decent childhood, and I am grateful for a lot. But we all have areas of improvement. It's just shocking about how few of us are committed to growing and taking action.

I am still somewhat uncertain about where my initial confidence came from. From the beginning, I didn't know how I would do things, I just knew I could figure it out. The initial motivation was extremely simple. As soon as I was willing and able, I wanted to improve my quality of life. Growing up, almost everyone I knew lived paycheck to paycheck. I remember friends' parents fighting and complaining about money. Complaining about jobs. Complaining about everything. I demand a life of positivity and abundance. When we gain clarity in that department, then I feel we can truly start living life.

Caprino: What would you say to millions of people in a similar situation?

Adams: Education is a great equalizer. It can give information and confidence to people in just about any situation and help them break out of it. At least in the U.S., and other first/second world countries.

Caprino: Do you view your prior situation as a positive or negative?

Adams: At the time I hated it. Now I feel like it was a great experience and gave me tons of perspective. It also gave me an amazing work ethic, because I still remember having little in life and I am determined to never get to that place again.

Caprino: What are your five top pieces of advice for entrepreneurial success?

Adams: My top five are:

1. Be addicted to education. Read books, listen to podcasts, and consume information that will challenge your mind.
2. Find great mentors. Do whatever it takes to get around people that will help you grow.
3. You're the average of the five people you're around the most. Get rid of your loser friends.
4. Know that no one ever has everything figured out. People viewed as the experts/leaders have as many challenges as anyone. You're not alone, and the BS you are going through is 100% normal.
5. Money won't make you happy. But it will give you the freedom to figure out what does.

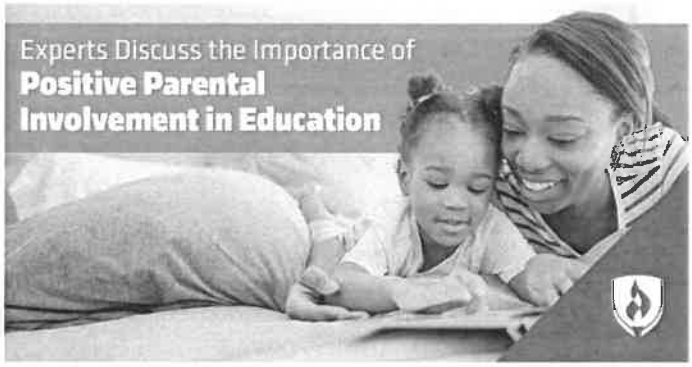
Caprino: What is your advice to those who feel as though they are held back from achieving greatness because of a roadblock (whether it's being a single parent, growing up low-income, etc.)?

Adams: This is really all perspective. You can view your situation as either positive or a negative. You can look at anything in your life as a bad situation or a learning experience. For example, a friend of mine spent multiple years in prison and actually used it as leverage to get the job he wanted when he was out of prison.

Basically, he told the employer that no one would ever work as hard and be more disciplined as him because if he makes a mistake, he goes back to prison for life potentially. Don't be afraid to leverage your past as to why you'd be the best fit for any opportunity.

For more information, visit unicorninnovations.com.

Experts Discuss the Importance of Positive Parental Involvement in Education, By **Ashley Brooks** on 11/18/2019



Parents are responsible for every detail of their young children's lives, from potty training to eating fruits and veggies. When kids finally board the school bus for the first time, most moms and dads breathe a sigh of relief. Finally, you can hand off some of that pressure to someone else, knowing that a qualified teacher will make sure your child receives the education they need!

But the role of parents in education involves more than just getting your kids safely to and from the bus stop. Research shows that parental involvement in education leads to greater student success and increased confidence, according to the **National PTA**.[1]

The National PTA also shares that "family involvement improves student success, regardless of race/ethnicity, class or parents' level of education."[1]

But what does parental involvement in schools look like? How can parents who are already juggling so many responsibilities find the time to invest in their kids' education?

We spoke with early childhood education experts to get to the bottom of these questions and more. Their advice will prepare teachers and parents to work together for the good of all children's education.

The importance of parental involvement in education

Many parents mistakenly believe that their children's education is entirely in the hands of teachers, but research solidly supports the case for parental involvement.

Research from the **National Coalition for Parent Involvement in Education** shares that "no matter their income or background, students with involved parents are more likely to have higher grades and test scores, attend school regularly, have better social skills, show improved behavior and adapt well to school."

The **National PTA** reports that "the most accurate predictors of student achievement in school are not family income or social status, but the extent to which the family . . . becomes involved in the child's education at school." It's undeniable that parents who are active supporters of their children's learning are giving their kids the best opportunity for educational success.

Parental support and involvement can also benefit kids of all ages at a developmental level that extends beyond academics. "When a child can see that their parent(s) is supporting them, they are more likely to take risks and learn something new instead of staying inside the box," says Ria Simon, early childhood educator and junior account specialist at **HiMama**.

Practical ways for parents to expand their role in schools

Parents who take an active role in their children's education are offering the support their kids need to see success at school. But determining *how* to get involved can be tricky, especially for parents who are also juggling a full-time job.

Our experts recommend these simple ways for parents to expand their role in their kids' education.

1. Be present at school when possible

Parents who make an effort to be present around their children's school are showing their kids that they care about their education—and that it's important enough to deserve their attention. This doesn't mean busy parents have to sacrifice all their free time to volunteer at school! Classrooms have many opportunities to get involved, so parents can choose the ones that work best with their schedules.

"Attend parent nights, conferences and open houses; chaperone field trips; volunteer in the classroom; or donate your time at home with materials and sending in needed supplies," suggests Mary O'Keefe, a veteran pre-k teacher at **Hudson Falls Central School District**.

2. Show interest in kids' schoolwork

Parents who are genuinely interested in their kids' education are in a good position to provide support or find outside help if they notice a child is struggling. They also build connections with their children as they share excitement over their successes and help them work through disappointments.

O'Keefe suggests going beyond asking, "How was your day?", and focusing on more specific questions like, "What do you like and dislike about school?" or "What subjects are easy or hard?" She also shares that reading together and displaying children's work at home are ways parents can communicate that they care about what their kids are learning in the classroom. Showing that you care about what they're learning helps reinforce the importance of it.

3. Keep a positive attitude towards education

Parents might think that cracking down is the right way to handle kids who say they dislike school or don't want to do their homework. However, parents who keep a positive attitude about education are more likely to pass that sunny outlook onto their kids.

"Make any school involvement positive," says Simon. "An example of this is sitting with them while doing homework/worksheets or showing them it is okay to fail and what to do when that happens." And most importantly, "Always support them, no matter the outcome."

Young children, in particular, are still forming their thoughts and feelings toward school—so do what you can to reinforce the positive and build them up as they work through any struggles.

How to recognize and avoid negative involvement

Of course, not all parental involvement is positive. We've all heard stories of overeager "helicopter parents" whose hovering actually harms their children's ability to learn and grow.

"Parent contact is important, but constantly contacting your child's teacher for every little thing can make your child feel as though they can't handle a problem at school," O'Keefe says.

She adds that this type of over involvement can pass a parent's worries along to their child. "Children do need to feel that school is a good place to be and a safe place. If a parent seems nervous about school, your child will feel nervous," O'Keefe says.

Education expert **Chris Drew** agrees that excessive worry can hamper students' ability to learn. "Challenges are great for children's development. By contrast, constantly worrying about a child and holding them back is only going to rub off on the child and will harm their confidence in the long run."

O'Keefe advises parents of little ones to watch for signs that their kids no longer want to do things for themselves, like dressing themselves or packing their own backpack. "That may be a good time for parents to take a step back and re-evaluate their involvement," she says.

Parental involvement for children's success

Parents have a lot to worry about when it comes to raising young children, but determining how to support their kids' education shouldn't be one of them. Thanks to these expert tips, parents and teachers can work together to create positive parental involvement in schools!

Screen time is another top concern for parents. Learn how to navigate the tricky territory of screens and kids with our article, "**Screen Time Recommendations: ECE Experts Shed Light on the Pros and Cons of Screen Time for Kids.**"

Why should you not buy an EV?

Everything else you own is electric, or so it seems... so why not the car?

As a nation we're very fond of the internal-combustion engine. Sure, we use electricity to run shavers and hair dryers ... the list goes on. But most of us draw the line at electric power for our motor vehicles …

As consumers, we demand a particularly high standard for cost and efficiency when it comes to electrically-powered motor vehicles, but some of the antipathy for electric vehicles also appears rooted in emotion and prejudice. Here are some common concerns – and responses.

EVs are expensive to purchase

Currently it's true that EVs are more expensive than similarly-specified cars powered by internal-combustion engines. The Hyundai Ioniq Electric Elite is presently priced at $44,990. A conventional Hyundai i30 auto with the 2.0-litre engine in entry-level ('Active') trim costs $23,390 – barely half the price of the EV.

Factor in the total cost of ownership over a five-year period, however, and that closes the gap considerably. Based on an average electricity tariff of 28 cents per kilowatt-hour, the Ioniq will likely cost about $20 to drive 400km in a week.

The i30, based on $1.40 per litre of petrol and covering the same distance (in an urban setting) costs $56 a week to run. …Over that five-year period the Ioniq reels in the purchase price advantage of the i30 by about $10,000 once you've also included the reduced cost of servicing.

Electric-vehicle range is inadequate

Most urban-focused electric vehicles are just not practical for longer trips…The Hyundai Ioniq's real-world range, … is around 230km. That would (just barely) take you from the eastern suburbs of Melbourne to Apollo Bay…But if you're using the Ioniq as a runabout around town, the range is more than adequate for most drivers. Upmarket EVs from Tesla, Jaguar and other prestige brands can better the Ioniq's range by a considerable margin.

By way of contrast, a four-cylinder internal-combustion car can typically travel up to 400km or further on a tank of fuel, but not if all its travel comprises short trips ... The conventional four-cylinder car's range might be as low as 300km in that circumstance …

There is no recharging infrastructure in Australia

We're yet to see EV recharging stations proliferate to the same extent as service stations, but among the nations of the world Australia is relatively well placed to take advantage of electrically-connected residential garages for recharging EVs...

It only takes a cursory internet search to find stories about new electric-vehicle recharging stations being installed around the country. It's common to see such stations in the public car parks of the nation's larger cities, but they're beginning to sprout up in regional centres as well, and along the major highways linking capitals.

Best of all, most new homes feature garages with electrical power connected, so charging may be as simple as opening a flap on the car's bodywork, inserting an electrical adaptor and flicking the switch at the wall to 'on'…

If the home you own has a separate, unpowered garage, it will set you back a few hundred dollars to have electricity connected – and you might as well specify a 15-Amp outlet for faster charging…

EVs take too long to recharge

Recharging does take time. It's not like the three minutes required to fill the fuel tank of a conventional car, …Recharging a thoroughly depleted battery … from a domestic 10Amp power outlet will certainly take a few hours at least. But if you're recharging from home, you're probably doing so overnight…anyway.

It's unlikely that you'll use up 90 per cent or more of the battery's capacity in a typical day …so recharging the battery to 100 per cent may not be as time-consuming as the manufacturers suggest.

Out in public ... there are fast-charging facilities that will deliver an 80 per cent charge while you're in a business meeting or having lunch with a friend. Typically, a fast charge ... can take roughly 20 minutes or half an hour, depending on the type of vehicle and the output from the recharging station.

EVs are as dirty as conventional cars if recharged from coal-fired generation

Back in 2009 Mitsubishi was telling Australian journalists that even in Victoria – the local home of brown-coal power generation – the company's tiny i-MiEV emitted only marginally more CO2 than the Toyota Prius, a petrol/electric hybrid....

Evidence supports the view that EVs are actually cleaner than conventional cars, even if they are charged from electricity supplied by a coal-fired power station. They're certainly cleaner when recharged from the growing number of sustainable-energy resources, which are conservatively anticipated to generate as much as 50 per cent of Australia's power needs by 2025...

Few people criticising EVs for relying on coal for power generation take into account the well-to-wheel CO2 emissions of an internal-combustion car. The CO2 emitted in the refining of petrol or diesel is in addition to the particles spat out of the exhaust.

And while some critics counter that with the question of how well-to-wheel emissions for a high-performance Tesla measure up against a light hatch with a sub-2.0-litre petrol engine, the obvious comeback there relates to comparing apples with apples.

How much cleaner is the Tesla against a conventional car offering the same or similar performance potential – something like a Lamborghini Huracan for instance?

The manufacture of EVs is more carbon-intensive

Manufacturers acknowledge that production of a battery-electric vehicle results in more CO2 emissions than production of a conventional, internal-combustion car. But they also state that smaller EVs, ... can offset the increased emissions within six months...

Larger EVs, like the Tesla Model S and Model X may not offset the emissions during manufacture until they've completed 18 months of continuous operation on the road.

EV batteries are expensive to replace, don't last long and are environmentally toxic...

For the time being, the state of the art in terms of commercially available battery technology is lithium-ion. The price of lithium has doubled in recent years...But analysts say that with Chile extracting lithium from seawater and more mines opening up in Australia, the price will fall by 45 per cent within two years.

Lithium gets a bad rap in some quarters for its impact on the environment, but a recent Swiss study attributed less than 2.3 per cent of an EV's environmental footprint to the mining of lithium.

Much of the concern with mining lithium is based around the need for massive quantities of water, which leaves farmers in the vicinity of the mine struggling to grow crops. In the Pilbara, however, where Australia is already digging up and exporting huge quantities of the raw material for lithium-ion battery production there's not that much farming going on nearby...

500,000 new EVs each year will blow out the national electricity grid... and the household budget

... Power bills have been out of control for a few years now. And Australia's national grid is generally felt to be badly in need of an upgrade to cope with higher loads from electric vehicles in future. ...

A point to note about EVs, however, is that a smaller car like the Nissan LEAF only draws about the same power to recharge overnight as a refrigerator.

Domestic power bills have climbed so high that private consumers are collectively migrating to photo-voltaic cells on the roof of the family home to reduce their dependency on power from the grid. ..., according to the Clean Energy Council, in excess of two million Australian homes now have solar panels installed...

Why buy an Electric Vehicle?

EVs are cheaper to run

EVs are significantly cheaper to run, including fuel savings of up to 70% and maintenance savings of around 40%.

For an average car travelling 13,700 km per year, this could amount to an annual fuel saving of $1000, or $1200 if the EV is able to charge overnight on an off-peak tariff.

Battery electric vehicles (BEVS) have a lot less moving parts than a petrol or diesel car. There is relatively little servicing and no expensive exhaust systems, starter motors, fuel injection systems, radiators and many other parts are not needed in an EV.

Energy tariffs	Average travel 15,000 km pa	More travel 25,000 km pa
Peak	$5,300	$8,800
Off-peak	$7,300	$12,200

< Fuel costs of common ICEVs and BEVs

EVs offer a great driver experience

EVs can also lead to an improved driver experience since the vehicles are much quieter, smoother and cleaner. The smoother battery engine removes the noise and heat generated by petrol and diesel-powered engines. EVs are also easy to operate and offer a low-effort driving experience. The vehicles inherent quietness while driving reduces stress in traffic - an attribute that most do not fully appreciate until they have experienced it.

EVs are considered by experts and users as having a greater technical performance than internal combustion engine cars.

Regenerative braking: Most EVs come with some form of regenerative braking system – lifting your foot of the accelerator – without touching the brake pedal – will slow the car down to a complete stop.

Faster to accelerate: EVs deliver instant torque so they can accelerate much faster than comparable internal combustion engine cars. With no gears to work through, an EV can apply full power as soon as you touch the accelerator.

Better handling: Many EVs have been built with the battery running underneath the vehicle, as opposed to the front or rear of the vehicle. This lowers the centre of gravity and provides greater handling.

They're quiet: At low speeds, EVs produce almost no noise, making them more pleasant and fun to drive.

EVs are environmentally friendly

EVs offer the potential to significantly reduce greenhouse gas (GHG) emissions and harmful tailpipe emissions, especially when paired with renewable energy.

In Australia, the transport sector accounts for almost 20% of the total emissions. Transport emissions are the second largest source of emissions (after the energy sector) and the fastest growing source.

Battery electric vehicles have zero tailpipe emissions, reducing the harmful air pollution from exhaust emissions. Pairing an EV with renewable energy, such as solar photovoltaic (PV) and battery storage can further reduce GHG emissions.

EVs can meet most people's daily travel needs

EVs meet most people's daily travel needs. The average Australian drives around 40km a day. The exact range of an EV will depend on a number of factors including the type of EV, the battery, the type of roads driven and your driving style.

Most EVs can easily drive 200km. Increased battery technology will also increase EVs' driving range, with new models able to travel at least 400km on a single charge meaning that most people would only need to top up their battery every day or fully charge it once a week!

Topic 3 – Article 1

TOP 3 REASONS THE US SHOULD SWITCH TO YEAR-ROUND SCHOOLING, BY MATTHEW LYNCH

AUGUST 13, 2016

The traditional school year, with roughly three months of vacation days every summer, was first implemented when America was an agricultural society. Learning to read, write, and perform basic arithmetic in classrooms was simply not as important as keeping up family farms and building the nation. The summer months were needed exclusively for farm work.

Since then, we have completely changed as a nation—today, the majority of U.S. K-12 students aren't spending summers off tilling fields or harvesting crops. However, the idea of summers off from school is alive and well. The American Enterprise Institute for Public Policy Research finds that the average American student receives 13 weeks off of school each calendar year – with 10 or 11 of those coming consecutively during the summer. Barely any other countries have more than seven weeks off in a school calendar. Only around 10 percent of U.S. schools currently use a year-round school calendar with shorter breaks inserted throughout the year.

With the US lagging behind countries such as Korea in terms of academic performance, it may be time to consider drastic changes to our public school system. Year-round schooling might just be a solution—and surprisingly, it could even be one that students will enjoy. Here's why:

1. **Students will actually remember what they learn.**

Year-round schooling means that students do not fall victim to the "summer slide," or the well-documented phenomenon where students unlearn some of the knowledge they worked so hard to attain when too much consecutive time is taken off from school.

A study released in 2007 by The Ohio State University found that there are really no differences in learning between students who attend school year round and those who are on a traditional schedule. However, the National Summer Learning Association often cites decades of research that shows that it can take anywhere from 8 to 13 weeks at the beginning of every school year for teachers to get their students back up to speed and ready to learn the new grade's material.

Either way, when it comes to learning and retention, students who attend year-round schools have nothing to lose and much to gain.

2. **It's an easy way to bridge the achievement gap.**

Minority students, students who speak English as a second language, economically disadvantaged students, and students with disabilities are the most affected by the summer fallback. Studies have found that disadvantaged students lose about 27 percent more of their learning gains in the summer months than their peers.

If that is not enough to affirm the need for year-round schooling for minorities, researcher Daniel O'Brien concluded that minority students progress their learning proficiency the fastest during the school year when compared to white and economically advantaged students.

Furthermore, Anna Habash of Education Trust, a nonprofit that works with schools to better serve their student populations, says that for minorities, a year-round school schedule does more than help academically. In an interview with Education News, Habash said that schools with high numbers of poverty and minority students benefit greatly from year-round schooling because it keep students "on task" and leads to more "meaningful instruction" when there are not a lot of academically sound options at home.

Minorities also drop out of high school at rates that are higher than their white counterparts. According to Jessica Washington of Politic365, the solution is year-round schooling. She reports that the national dropout rate is 5 percent, while the dropout rate for year-round school students is just 2 percent. These dropout statistics are not broken down by racial or socioeconomic backgrounds, but if the overall dropout rate is lower for year-round schools, it is likely that the minority dropout rates in this model are also lower. The reasons why dropout rates are lower in year-round setups are easy to deduce: students have less time to adjust to time off from school, and in the case of high schoolers, they have less time to work.

While this inability for teenagers to work and make money in the summer has been cited as a pitfall of year-round schooling, the disadvantages of this are short-lived. High school graduates earn $11,000 more per year than those with a G.E.D. or less, and that number rises to $36,000 more with a bachelor's degree. Giving up a few summers of minimum wage work in exchange for the higher lifetime earnings a high school diploma affords is a small price to pay.

3. **Students will actually like school.**

Students will do more than just learn better in a year-round school.

Teachers and students experience a closer relationship in year-round schools than they do in traditional, shorter-calendar-year schools. In the absence of any long-term break from school, students do not feel detached from the school environment.

The experience of immersion in learning offered by year-round schools, with more time spent in classrooms, proves to be beneficial to many students from low socioeconomic backgrounds in particular, including those for whom English is a second language. Many second language learners who have difficulty mastering English benefit from the opportunity to immerse themselves in English during intersession classes. They also develop better relationships with other students.

Results from research studies show that students in year-round schools are more self-confident, have a higher self-concept, have fewer inhibitions, and feel positive about their schooling experience.

But what about down time? Don't children need time to just "be kids"?

Some childhood development experts believe that for younger students, time off in the summer months is vital to healthy development. They believe that kids are not designed to spend so much of their time inside classroom walls and that the warmer, pleasant weather of the summer provides a perfect opportunity to get outside and experience childhood. The problem with this argument, of course, is that most children are no longer spending their summers frolicking in fields of flowers or running around their neighborhoods, hanging out with other kids.

A recent Harvard University study found that school-age children tend to gain weight at a faster pace during the summer months than during the school year. Children today spend more time in sedentary activities like watching television or using mobile devices instead of playing outside or participating in active pursuits. Not only must K-12 students relearn the academic items, but they must also shift their mentalities from less-active, sedentary ones to sharp, alert learning models.

The American Academy of Child and Adolescent Psychiatry reports that by the time children graduate from high school, they will have spent more time watching television than in classrooms. What's more – children who watch an excessive amount of television generally have lower grades in school, read fewer books and have more health problems. While some children visit summer camps, or attend child care when school is out, others stay at home, inside, with not much else to do than watch TV or play games on electronic devices. This is especially true for kids who are middle-school age or higher and are able to stay home alone when parents work. The "down time" of the summer months is really just empty time, often void of anything academically or developmentally advantageous.

As the US establishes itself as a knowledge and innovation-based economy, the usefulness of a traditional school year diminishes. There are many reasons changing from our traditional school year to year-round schooling makes sense. As with any adjustments, making the switch would not be easy. However, with all its advantages, it is certainly worth considering.

Topic 3 – Article 2

3 REASONS NOT TO ADOPT YEAR-ROUND SCHOOLING, BY MATTHEW LYNCH

OCTOBER 27, 2016

I have long been a proponent of year-round schooling. In the past, I have often discussed why I feel that teachers should get behind the push to support year-round schooling and how more consistent time in the classroom will lead to higher student performance, boosting teacher accountability ratings and accommodating a much more streamlined education process. But is it really worth up-ending the school system as we know it?

Let's look at some reasons to be concerned about changing from our traditional summers-off calendar to a year-round schooling model.

1. It could end up being more expensive.

The summer months are typically the highest ones for energy consumption. In fact, the average electricity bill for homeowners in the summer months goes up 4 to 8 percent. Having empty classrooms in the summer months means less money going out to air conditioning and prevents other warm-weather costs from hitting school utility budgets. It may seem like a minor point, but an increase in utility bills for one-quarter of the year really could hurt schools' bottom lines.

2. The children won't have enough down time.

Some childhood development experts believe that particularly when it comes to younger students, time off in the summer months is a vital component of healthy development. The argument follows that kids are not designed to spend so much of their time inside classroom walls and that the warmer, pleasant weather of the summer provides a perfect opportunity to get outside and experience childhood.

There's a big problem with this argument, though. It's that most children these days are not spending their summers frolicking in fields of flowers or running around their neighborhoods, hanging out with other kids.

The days of kids spending their summers outside, communing with nature and getting plenty of exercise, are long gone. A recent Harvard University study found that school-age children tend to gain weight at a faster pace during the summer months than during the school year, a fact attributed to more time spent in sedentary activities like watching television or using mobile devices instead of being outside or participating in active pursuits. Now, not only must K-12 students relearn the academic items, but they must also shift their mentalities from less-active, sedentary ones to sharp, alert learning models – and teachers face the brunt of this responsibility.

The American Academy of Child and Adolescent Psychiatry reports that by the time children graduate from high school, they will have spent more time watching television than in classrooms. What's more – children who watch an excessive amount of television generally have lower grades in school, read fewer books and have more health problems. While some children visit summer camps, or attend child care when school is out, others stay at home, inside, with not much else to do than watch TV or play games on electronic devices. This is especially true for kids who are middle-school age or higher and are able to stay home alone when parents work. The "down time" of the summer months is really just empty time, often void of anything academically or developmentally advantageous.

3. There might be some scheduling issues caused by the calendar change.

For parents with children of different ages and in different schools, a year-round schedule could present serious scheduling issues. This argument assumes that schools would actually adhere to different time off schedules – something that seemingly could be adjusted so that all schools within a particular district or geographic area were on the same schedule. There is also the child care debate that says it would be difficult for working parents to find babysitters for one or two weeks at a time every few months, as opposed to three months straight in the summer. Again though, the market adjusts with demand and it seems to me that child care centers and camps would offer programs when students needed them. Just because those programs are not available now does not mean they would not exist when families were willing to pay for them.

The most common arguments against year-round schooling seem like a stretch. They reek more of the fear of change rather than actual concern. They are based on ungrounded assumptions and are simply not strong enough to stand against the reasons **we should** adopt a year-round schooling model here in the United States.

Topic 4

The challenge of civil service: mandatory or voluntary?

More and more young men and women want to be able to access civil service: is it right, in that case, to make it mandatory? Five reasons in favor of it VS five reasons against

"I propose to create a body of civil service, because this type of work assumes a precise, concrete value, not only to counteract the current crisis but because it is the instrument to create a future national wealth". These are the words of the 32nd American president, Franklin D. Roosevelt, who, in order to counter the long lines of the Great Depression, in 1933 collected 275,000 volunteers in one of the most extraordinary experiences of civic mobilization, the "**Civilian Conservation Corps**". So what can we learn from this experience?

We can learn that **everyone agrees on the generativity and the ability to create value of the civil service.** Inevitably, however, **every time we open the debate, one question** – it happened at the time, for Roosevelt – **splits opinions: to leave it to a free choice or to make it mandatory**? Whether voluntary or obligatory, civil service is an open debate (even for our politicians, let us just think of the repeated proposals by the Lega for a return to mandatory service), which arouses growing expectations in younger generations. And this is surely positive.

There are many reasons that are for a mandatory civil service, and the reasons against it are equally many. Let's have a look.

YES

The reasons in favor: civil service as an obligatory civic draft

1. In an increasingly individualistic and liquid society, **a mandatory period of equal duration for everyone would be a decisive moment for generational equity.** The obligatory nature allows the civil service to distinguish itself from a "normal" volunteering experience, becoming the unifying moment for all those boys and girls who do not belong to the so-called "Erasmus generation".
2. The obligatory nature of civil service **enhances empathy towards others, strengthening social bonds and national cohesion.**
3. Mandatory civil service **brings an emphasis on duty** rather than rights. In a social context that is increasingly uncoordinated and non-responsible, **an obligation is the springboard for forming a new sense of citizenship based on responsibility and duties.**
4. The obligatory nature of the service is not an excess of statist paternalism, but rather a gentle push – a nudge- that allows young men and women **to develop an experience that can be transferred into employment.** In our current society **we are lacking rites of passage from adolescence to adulthood; a mandatory civil service can compensate and, in the medium term, remedy this situation.**
5. **The traditional welfare state crisis needs new resources to serve the common good.** Many young people, even today, despite wanting to, cannot access the civil service. The voluntary system has therefore failed. Obligation makes it possible for everyone to take part and become a full member of civil society, while at the same time guaranteeing new forces to informal welfare and thus compensating for greater expenditure for the state.

NO

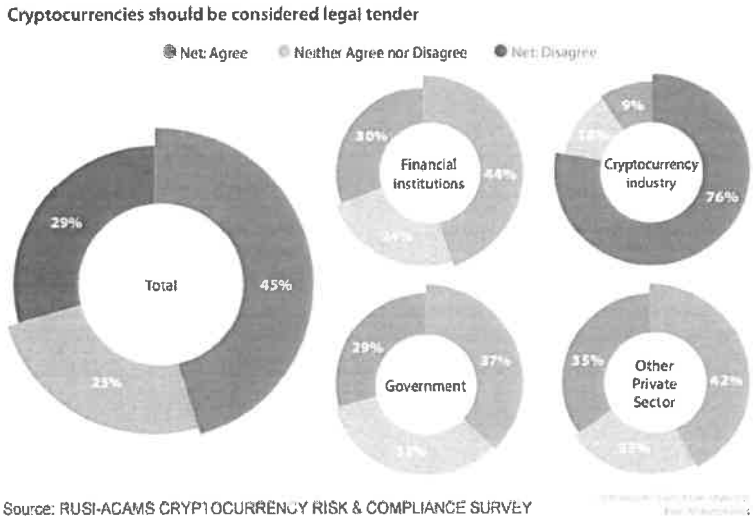
The reasons against: civil service as a voluntary civil draft

1. Instead of reducing disparities and promoting social cohesion, **an obligatory civil service favors young people who already have an advantage and creates disadvantages for the least favored in social, educational and employment terms**. Even today, 60% of the young people who say they want to volunteer cannot because work, social reasons, family or time. It would be better, therefore, to affect these levers through structural interventions.
2. Young people encounter too many obstacles in their education and work. A year of compulsory civil service, as was already the case for military service**, delays their entry into employment and hinders their school career.**
3. The civil service **masks a form of "forced labor"**, prohibited by international standards and by our legal system.
4. The obligatory nature of the service involves **the presence of administrative, reception and control structures which, to date, are not there.** The State, given the current crisis, cannot afford them. Furthermore, the mandatory system would plunge the existing system (associations, non-profit organizations) into a profound organizational crisis, which would have to respond to more than 400 thousand applications, forced against the will, and then having to face discontent and discord.
5. Finally there is a liberal reason against it: **no one can be forced to be altruistic.** For this reason, the value of a choice is to be encouraged, stimulated and encouraged. But the obligatory nature ends up contradicting the values (solidarity, empathy) and the potential (construction of a new awareness, of a new citizenship, that is the "future wealth" indicated by Roosevelt) inherent in the very idea of a service concretely and universally civil

Topic 5 – Article 1

September 29, 2020

by Ledger Insights



A survey about cryptocurrencies' criminal risks had a surprising finding. When financial institutions were asked whether cryptocurrencies should be considered legal tender – as in stores are required to accept them as payment – 44% of respondents said yes.

The survey was conducted by YouGov on behalf of the UK defense think tank Royal United Services Institute (RUSI) and anti-money laundering education body ACAMS. It carries even more weight because ACAMS is headed by the former Executive Secretary of the Financial Action Task Force (FATF).

Asked about the prominent uses of cryptocurrencies, as a first-choice pick, financial institutions (FIs) reckoned that 50% of people use them for investment or speculation, with 35% for illicit purposes and the remaining usage as payments. In contrast, the crypto industry put investment at 81% and illicit use at 2%. Government respondents were in between with 62% thinking investment and 26% illegal purposes.

The same question was posed, but with a timeline of five years in the future. The crypto sector put first choice usage for payments as 63% with investment as the balance. FIs selected payments as 38%, investment as 37% but still believe 26% will be for illicit purposes.

The report authors concluded that cryptocurrency firms may be underestimating the types of threats posed. And that FIs and others are likely overestimating the degree of criminal activity.

There was a contrasting perspective on cryptocurrency firms preparedness for dealing with cybercrime, with 48% within the sector believing they're prepared but only 9% of FIs agreeing with that.

Perceptions about the traceability of cryptocurrencies also showed a gulf. Eighty-three percent of the crypto industry believes that cryptocurrency is more transparent than traditional transactions. Whereas 63% of FIs disagree. If you think about it from a crypto perspective, anyone can do the tracing, and then you need to speak to one exchange to convert pseudonymity into a real name (if an exchange was used). For a fiat transfer, banks already know real names. On the other hand, banks can only follow a payment trail with which they were involved. Anything more requires additional effort.

One of the most novel questions was whether cryptocurrencies should be considered legal tender. Naturally, 76% in the crypto sector thought so. But a surprisingly high figure of 44% of financial institution respondents agreed and 37% from the government. But then surely the question would be: which ones? Because there are plenty that are rather illiquid.

The report noted that on many issues, there was little regional difference. However, when FIs were asked whether cryptocurrency was easier to use than fiat currency, 43% of Asians agreed, versus 15% for Europe and 9% for the U.S.

Perhaps it's no surprise that China is likely to become the first major economy with a digital legal tender.

Reasons To Make Bitcoin Illegal

Tax Evasion

The first problem with Bitcoin is the high potential for tax evasion. The United States government collects income tax. Under Federal law it does not matter whether that income is in United States legal tender or an alternative currency. USD, Ithaca HOURS, and, in theory, Bartering are all taxable.

The problem with Bitcoin is that there is no clear mapping from coins to user. Coins are mapped to addresses and only the user knows what addresses they own. The United States government would have to hack into a person's account(s) in order to find out if he or she was being honest about his or her Bitcoin income.

The United States Government is also incapable of implementing sale taxes in Bitcoin because there is no way for addresses to be mapped to nationality. Consequentially, there is no way to know how much each transaction should be taxed and where the tax should be sent.

Haven for Black Markets

One of the worst foreseeable consequences of making Bitcoin legal is the fact that Bitcoin economies are the perfect haven for black markets.

Bitcoin has two properties that make it perfect for black market dealing. First, users are anonymous. An item can be sold and purchased without each party knowing from where it comes. As a result seller of contraband can sell their products to customer without fear of the buyers being able identify them to police.

Second seller of contraband can change their addresses each time they made a transaction. This would make it extra difficult to find out how many people were selling a type of contraband.

Haven for Money Laundering

If a person wished to lander their money all they would need is two Bitcoin accounts. Account A would exchange laundered USD and receive Bitcoins. Then Account A would sell those coins to Account B under a different address. Then Account B would exchange the Bitcoins for legitimate USD. So long as Account A is remained hidden from the police, Account B and its user look perfectly legitimate.

Unlike tradition money laundering, the lack of a physical and bank interaction makes back tracing the money that much more difficult. Worst yet the launderers could keep changing the addresses of both accounts to make the transactions look less conspicuous.

The Bottom Line

If Bitcoin were to become viable it would provide an alternative way of exchanging goods. However Bitcoin by its very nature would work well, if not best, in the world of illicit behaviour. It could provide criminal with the anonymity that they desire. For these reasons we believe that it is the United States best interest to either modify of Bitcoin economies or to make them outright illegal.

Year 10 - Persuasive Language Devices:

	Device and Definition		Example	Possible Purpose and Effect
1	**Evidence**	**Use of Experts** Quotes, testimony, opinion or advice from an expert in a field related to the issue.	• "*According to Professor* Joan Stapleton of Melville University, research studies around the world have shown *conclusively* that speed kills"	• Gives authority to an opinion or argument because most people would believe that advice from a University professor is informed, unbiased and reliable. • This example uses the words "conclusively" which says to the readers that, if the experts all agree, so should they. • The writer's own professional position is also often used as a device to lend credibility and relevance to their participation in the debate.
2		**Use of Facts, Statistics and Research Findings.**	• "The city's 1.5 million households used over 500 billion litres of water" (statistics) • "Wind power generates fewer pollutants than the burning of fossil fuels" (fact)	• Can lend weight to the argument and give the author credibility if employed responsibly. • Evidence can sometimes be misused and questioned. E.g. the sample used to generate the statistical data may be so small that any conclusions would be questionable.
3		**Case Studies and** **Recorded Sound and Images.**	• "Graphic *video images* of detectives beating and kicking a suspect in an interview room have rocked the inquiry into the Victoria Police's disbanded armed offenders squad" (recorded images)	• Positions the reader to share a point of view because it is objective and appears difficult to challenge/irrefutable.
4		**Anecdotal Evidence** Personal accounts.	• "Two large, long haired dogs were allowed to roam the streets on Friday afternoon. They came into *our yard and killed our pet rabbits*. Dog owners should obey the rules."	• Makes a strong emotional impact on readers and arouses their sympathy. • Connects with other people's experience, making it easy to relate to • Can be more interesting and more appealing to other people than the results of research and statistics.
5	**Emotive Language** Deliberate use of strong words that play on reader's feelings (in particular, adjectives or adverbs).		• "It is *ludicrous* and *appalling* to imagine that after so many years of loss experienced by the Noongar people, the Western Australian Premier has appealed against granting them native title".	• Used to evoke a strong emotional response from the reader in order to pressure, even coerce readers, to agree. • Used to create *empathy in the reader* (empathy is when a person can understand the emotions of another or 'put themselves in their shoes'.
6	**Inclusive (and exclusive) Language** Use of personal pronouns (I, you, we, they, their, our, etc) to either involve the audience (inclusive) or to distinguish or alienate (exclusive).		• "*Our* local community...", "*we all* agree /feel that...", it's *commonly known that*..." (inclusive) • "*We* all have a role to play in the conservation of our precious resources" (inclusive –positive) • "*We* are destroying this planet all by ourselves" (inclusive – negative). • "*Their* poor policies" (exclusive – alienating) • "*They* had *their* own laws, *their* own beliefs" (exclusive – distinguishing).	• Targets or accuses particular groups • Can create a sense of solidarity (togetherness, comradeship) as it directly invites the audience to join in and work towards a common goal. • Can serve to dissuade people from a course of action by playing on their sense of belonging and desire to be included. • Can encourage a sense of responsibility, especially as it often combines with appeals to community, family or patriotism to fuel the audience's feelings of social responsibility or the common good.
7	**Repetition** (of words and phrases)		• "We *cannot imagine* the horrors they faced; *cannot imagine* the strength of their spirit. And we *cannot* allow it to happen again". • "*Insufficient* bed space! *Insufficient* staff! *Insufficient* funding! That's our hospital system"	• Memorable; enables a word or phrase to be held and recalled. • Highlights main ideas. • Creates a hypnotic rhythm. • Can evoke an emotional response.

8	**Rhetorical Questions** Questions that do not require an answer.		• "Did anyone listen to the garbage he was sprouting? Was anyone awake? And do I really have to wait another four years for this baboon to leave office?" • "And why do we do this? Because we are fair."	• Encourages reader to consider the issue and accept the author's answer. • Can imply that the answer is obvious and that anyone who disagrees is foolish. • The tone of the question usually positions the audience to accept the implied answer.
9	**Analogies/Comparisons** Comparing		• "*If we* blame computer games for violence in our community, *we might just as well* blame the weather bureau for drought or bad weather."	• This example points out the inconsistency between the comparisons and throws doubt on any link between computer games and increasing violence in the community. It also ridicules those that make this link.
10	**Appeals to:**	**Patriotism or National Pride** Is a love of one's country	• "The *Digger's fought valiantly* despite the odds, typifying our *Aussie spirit*".	• Appeals to our feelings of attachment and loyalty to the values and culture of our country. • Appeals to our desire to defend anything that is ours, even if we don't like it. It stirs passionate responses.
11		**Hip-pocket nerve** Make the readers feel concerned for their financial wellbeing. Can appeal in two ways; positive or negative.	• "What an outrageous rip-off!" • "tax burden" (negative impact) • "tax relief" (positive impact)	• Positive hip-pocket appeals are used to cause happiness and relieve tension when financial gain is around the corner. • Negative ones can cause anger, outrage and anxiety. • If consumers feel their funds or taxes have been misused, they are likely to erupt in anger or outrage
12		**Fear**	• "This intervention will only serve to aggravate extremists and *make us even more of a terrorist target*." • "*Hordes* of *illegal* immigrants continue to arrive on our shores". • "Cars are lethal weapons with hoons at the wheel."	• This appeal plays on people's fears and can be very effective because people tend to respond emotionally when their security, safety, country or those around them are under threat. • Presents an extreme-case scenario as highly probable, triggering the feeling that it is imperative to find solutions. • No-one likes to feel fear, so people's attitudes can be easily manipulated because of their need to feel safe.
13		**Common-sense**	• "She charged victims of sexual assault for their own rape kits. I don't even know what rape kits are, but I sure as hell know you don't charge people for them."	• Points out the obvious, therefore positioning the reader to agree with what appears to be a common sense and logical argument.
14		**Fairness and justice**	• "Penalising all students from bringing phones to school, simply because some students misused theirs, is a blatantly unfair."	• Encourages the reader to choose a side and to be on the side of what seems fair, honest and justified.

Debate Template.

	Component	Starter Sentences
	HOOK Engaging opening: Anecdote or story?	
Introduction	**Title/background on the issue**	I am here to support the position that…
	Sign Posting	The points I will be discussing are….

	Who is affected by it?	The main people, groups and organizations affected by this are… The reason they are impacted or are concerned are…
Body	**My contention: State your position/ argument.**	The first argument I want to add is….
	1) Supporting Argument One: Example/ Evidence Explanation	The first major reason I feel this way is… Research/Statistics/ IN the case of… it shows…

	2) Supporting Argument Two: Example/ Evidence Explanation	The second reason is… Research/Statistics/ IN the case of… it shows…
Conclusion	**Conclusions** 3) Explain what needs to be done/ the outcome of success in your position	When we look at these idea together, I feel it is clear that… The solution is… Thankyou.

Seymour College

Humanities Work Pack 2021

Year 10

Student: Teacher:

Learning Intention	Success Criteria
-Understand that the outcomes of World War II helped to shape the modern world. - Understand that many people have fought for rights and freedoms since 1945. - Understand that Indigenous peoples in Australia have struggled for rights and freedoms -Understand that Indigenous peoples in Australia have struggled for rights and freedoms	- I can research a specific event during the cold war and explain how that event occurred in detail. - Analyse sources - I can define terms and have an understanding of what those terms mean - Research an Indigenous high achiever and gather some background information on your chosen person.

Lesson 1	The outcomes of World War II
Lesson 2	The struggle for rights and freedoms since 1945
Lesson 3	Rights and Freedoms: A timeline
Lesson 4	Background to the struggle for Indigenous rights
Lesson 5	Indigenous achievements and contributions during the 19th and 20th centuries

Notes to Parents/Guardians:

You can support your child to complete their work at home by:

- Encouraging them to allocate time for specific subjects
- Reading the material and talking about the ideas with your child (where possible)
- Checking in with your child to ask how they are going
- Contacting Teachers if more support or explanation is required

Submission of Work and Feedback:

Students can upload work to Compass where access is available. Photos of handwritten tasks may also be uploaded. Students can also mail hard copies of their work back to the school in the supplied envelope. Students and parents can continue to communicate with Teachers

Lesson 1- The outcomes of World War II

1) How did the outcomes of World War II shape the modern world?
   Brainstorm some points
2) Read pages 338-343

Activity

Research a specific event from the Cold War period in more depth, explaining:

- who was involved
- what happened
- how it helps them understand the ideological differences between the two sides
- how the situation was resolved
- What its short- and long-term historical significance was.

You could choose from the following:

- division of Berlin
- Communist Revolution in China
- Korean War
- Hungarian Revolution
- Melbourne Olympics water polo game between Hungary and the Soviet Union
- Berlin Wall
- Cuban Missile Crisis
- Space Race
- Vietnam War
- Soviet invasion of Czechoslovakia
- 1973 coup in Chile
- Soviet invasion of Afghanistan
- fall of the Berlin Wall.

Lesson 2- The struggle for rights and freedoms since 1945

- The struggle for rights and freedoms since 1945 – specifically for African Americans and Indigenous Australians 344 – 349
- Read Pages 344-349

Activity

Analyse Sources 2–6 and construct a list of rights and freedoms that people have fought for since 1945.
Consider what the world would look like today if those struggles for rights and freedoms had been successfully suppressed. This is a suitable activity to do in pairs.

Complete questions 1-5

Lesson 3- A Timeline

- Make a list of examples of discrimination against Indigenous Australians since Europeans colonised Australia since 1788
- Rights and freedoms: a timeline Page352

Activity

- Create your own timeline and choose 6 significant events that you are interested in to plot on to your timeline using pages 322 and 353 to guide you.
  Answer questions 1-5 in full sentences. On page 353

Lesson 4- Background to the struggle for Indigenous rights

Overview of the impact of European colonisation on Indigenous people and the variety of ways in which the first Australians faced marginalisation and discrimination over the 19th and 20th centuries. Protectorates, missions and reserves are discussed and the issue of the Stolen Generations is touched upon

One of the dilemmas explored in the section is the idea that on one hand, there was an attempt by authorities to blend the Aboriginal population into the mainstream population so that the race effectively disappeared. On the other hand, there were many unofficial policies keeping the Indigenous people separate from the mainstream – they were banned from many pubs, swimming pools and even churches. Also, those children removed from their families were usually gathered together in children's homes or missions where they had little contact with mainstream Australians.

Activity
Use a dictionary and the Internet to find clear definitions of the following terms used in relation to the issue of rights and freedoms:

- assimilation
- multiculturalism
- apartheid
- segregation
- colour bar
- genocide.

Activity 2 Cootamundra Girls' Home

1 Read Source 7. The girl quoted in this document was removed from her family with three sisters when she was 8 years old. They were taken to the Cootamundra Girls' Home.
   a Explain the central problem that faced this girl and many others. Support your answer with two quotes that best express this problem.
   b Can you suggest ways in which the authorities could have helped these girls to better bridge the gap between their Aboriginal backgrounds and modern Australia at the time?
   c If you were able to ask one question of this girl, what would it be?
   d Research the Cootamundra Girls' Home and find three examples of the ways in which girls were treated.

Answer question 5 on page 357

Lesson 5- Indigenous achievements and contributions during the 19th and 20th centuries

Read pages 362 and 363

Activity 1: High-achieving Indigenous people

In the last quarter of the 20th century, there were considerable changes in the ways in which Indigenous people were able to participate in mainstream Australia. While there is by no means full equality, there are Aboriginal Australians who have been able to reach the highest levels in sport, art, entertainment, politics and media.

1 Research an Indigenous Australian who is a high achiever and has used his or her success to further the cause of reconciliation.
2 Write a short account of the hurdles they have overcome, what they have achieved and how they have helped bridge the gap between Aboriginal and non-Aboriginal Australians.

Some suggestions (but you may choose another person to research):
Graham (Polly) Farmer, footballer
Nicky Winmar, footballer
Catherine Freeman, athlete
Emily Kngwarreye, artist
Jessica Mauboy, singer and actor
Aiden Ridgway, politician
Stan Grant, TV presenter and journalist

Read Pages 364-365

Answer questions 1-5

Extension Task

Herbert (Doc) Evatt

Justice Michael Kirby said of Herbert (Doc) Evatt: 'There were few Australians of the 20th century who stacked up more achievements of lasting benefit to the nation and to the world.'

1 .Conduct some research into Evatt's life and achievements and write a piece (300 words) campaigning for him to be included on a list of 'Twenty great Australians of the 20th century'.

MATHS MATE 10

Term 2 - Sheet 3

Name: .....

Due Date: ...../...../.....

Parent's Signature: .....

1. [Long ×,÷] *

$286 \times 24 =$

2. [Decimal +,–] *

$14.74 - 5.038 =$

3. [Decimal ×,÷] *

$5.39 \times 0.3 =$

4. [Fraction +,–]

$3 - 2\frac{3}{4} =$

5. [Fraction ×,÷] *

$\frac{5}{8} \times \frac{4}{15} =$

6. [Percentages] *

2% of 250 cm = _____ mm

7. [Decimals / Fractions / Percentages] *

What percentage of the price of a $200 DVD player is an $80 deposit?

8. [Integer +,–] *

$(-24) - (+6) + (-15) =$

9. [Integer ×,÷] *

$(-2) \times (-4) \times (-30) =$

10. [Rates / Ratios] *

In June 2010 Australia was the world's third least densely populated country with 2.9 people/km^2. If Australia has an area of nearly 7.7 million km^2, what was its population in June 2010?

11. [Indices] *

Evaluate $5^6 \div 5$

12. [Square Roots] *

$4\sqrt{121} =$

13. [Exploring Number]

615 000 000 written in scientific notation is:

A) 615×10^8 B) 6.15×10^6 C) 6.15×10^8

14. [Applied Number] *

The employer pays 9% of your base income into superannuation. If your base income is $32 000, how much is the superannuation guarantee?

15. [Exploring Number]

Complete the pattern:

$\frac{1}{9}, \frac{1}{3}, 1, 3, 9,$ ___, ___

16. [Expressions]

Choose the like terms:

$x, x^2, -3x^2, -x^3$

17. [Substitution] *

Use $C = 2\pi r$ to find the circumference C of a circle when $r = 10$ and $\pi \approx 3.14$

18. [Expansion]

Expand $-qr(4q + 2)$

19. [Factorisation]

Factorise

$a^3b^2 + ab^2$

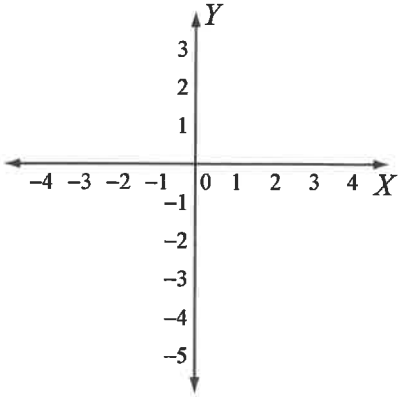
20. [Equations] *

Solve for x: $9(x - 10) = -x$

21. [Graphs & Functions] *

Sketch the graph of the linear rule $y = 2x - 5$ by first finding the x-intercept and the y-intercept on this Cartesian plane.

[Label the graph with the rule.]



QUOTE OF THE WEEK: Energy multiplies when you set a desired goal and resolve to work toward that goal. David Joseph Schwartz

22. [Units of Measurement / Time]

How much time is between high tide on Friday evening and the next high tide on Saturday?

Cape Melville (QLD) Tide data:			
Friday 14th May 2010		Saturday 15th May 2010	
03:08 am	1.3 m Low	03:50 am	1.3 m Low
08:28 am	2.2 m High	09:01 am	2.1 m High
02:55 pm	0.6 m Low	03:28 pm	0.6 m Low
09:45 pm	2.8 m High	10:27 pm	2.8 m High

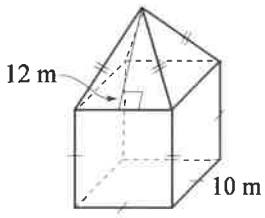
23. [Perimeter / Area] *

What is the perimeter of a square with an area of 81 mm^2?

mm

24. [Surface Area / Volume] *

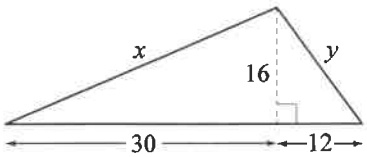
Find the total surface area of the obelisk.



m^2

25. [Pythagoras / Trigonometry] *

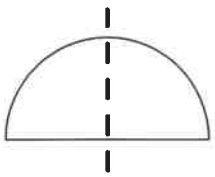
Find the missing lengths in this triangle.



$x =$ $y =$

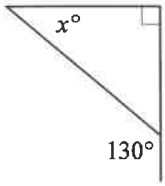
26. [Shapes]

Draw and name the shape formed if the semicircle is folded along its axis of symmetry.



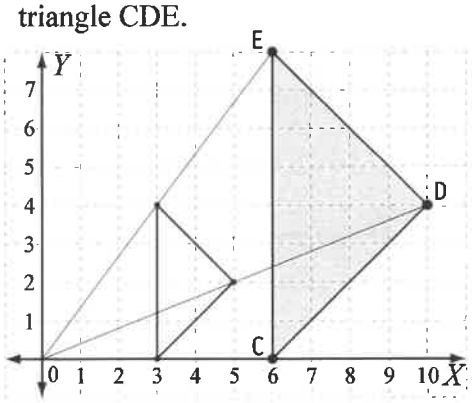
27. [Angles] *

Find the value of $x°$.



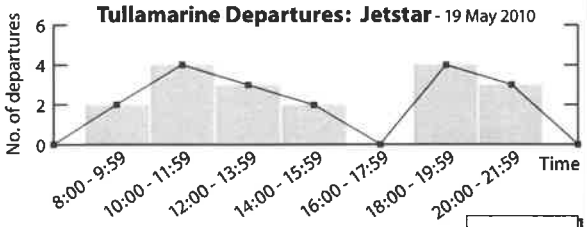
28. [Exploring Geometry]

Find the scale factor of reduction for the triangle CDE.



29. [Statistics]

How many Jetstar planes departed from Tullamarine airport on 19th May 2010?

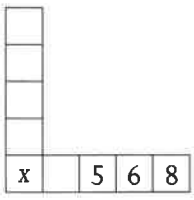


30. [Probability] *

A jar contains 10 white, 4 yellow and 8 orange jelly beans. Find the probability that a jelly bean drawn at random from the jar will not be yellow.

31. [Problem Solving 1] *

The digits from 1 to 9 inclusive are placed one per square in this diagram. The total of the five numbers in the vertical column is the same as the total of the five numbers in the horizontal row. How many different possible values of x are there?



32. [Problem Solving 2] *

I have \$100 with which I wish to buy exactly 100 animals to feed to my snake. Tender succulent mice cost \$5, large juicy fresh cockroaches are \$1, and imported blowflies are only 5¢ each. If I spend every cent buying these animals, and I buy at least one of each, how many cockroaches will I buy?

MATHS MATE 10

Term 2 - Sheet 4

Name: .....

Due Date: ...../...../.....

Parent's Signature: .....

1. [Long ×,÷] *

$459 \times 37 =$

2. [Decimal +,–] *

$0.907 - 0.055 =$

3. [Decimal ×,÷] *

$0.09 \times 2.6 =$

4. [Fraction +,–]

$5 - 2\frac{5}{6} =$

5. [Fraction ×,÷] *

$\frac{8}{15} \times \frac{25}{24} =$

6. [Percentages] *

25% of 3 L = _____ mL

7. [Decimals / Fractions / Percentages] *

What percentage is 12 out of 240?

8. [Integer +,–] *

$(+20) - (-8) - (+16) =$

9. [Integer ×,÷] *

$(+11) \times (-5) \times (-2) =$

10. [Rates / Ratios] *

On average, in Australia in 2010 one person was born every 1 minute and 46 seconds. Approximately how many people is that in 24 hours?

11. [Indices]

Simplify $\frac{c^4}{c^3}$

12. [Square Roots] *

$3\sqrt{196} =$

13. [Exploring Number]

0.000000201 written in scientific notation is:

A) 2.01×10^{-7} B) 2.1×10^{-6} C) 2.01×10^{-5}

14. [Applied Number] *

How much does Kay's employer pay quarterly (13 weeks) into Kay's superannuation if her fortnightly wage before tax is $1000?

[Superannuation guarantee = 9%]

15. [Number Patterns]

Complete the pattern:

$\frac{4}{9}, \frac{4}{3}, 4, 12, 36,$ ____ ____

16. [Expressions]

Choose the like terms:

$-jk, j^2k, -jk^2, 2kj^2$

17. [Substitution] *

Use $F = \frac{9}{5}C + 32$ to find the temperature F in degrees Fahrenheit when $C = 40$

18. [Expansion]

Expand $-2s(5st + 3t)$

19. [Factorisation]

Factorise

$2de - 8def$

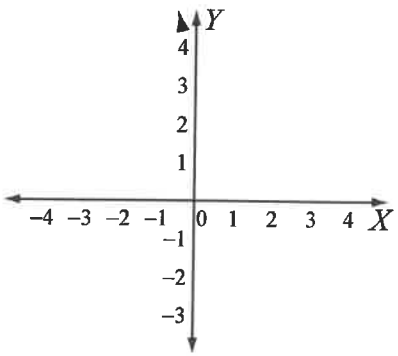
20. [Equations] *

Solve for x: $2(3x + 4) = 2(x - 10)$

21. [Graphs & Functions] *

Sketch the graph of the linear rule $y = -4x + 3$ by first finding the x-intercept and the y-intercept on this Cartesian plane.

[Label the graph with the rule.]



QUOTE OF THE WEEK: Individuals are occasionally guided by reason, crowds never. Dean W. R. Inge

22. [Units of Measurement / Time]

What is the earliest week day time you can arrive at the Arts Centre when travelling by tram from Bell Street?

Monday to Friday — Coburg to South Melbourne Beach

Route 1 via Brunswick > Carlton > City > Sth Melbourne

Stop		AM	AM	AM	AM	AM	AM	AM	AM
135	East Coburg - Bell St						5:40	5:50	6:00
112	Elgin St & Lygon St	4:59	5:11	5:35	5:46	5:56	6:06	6:16	6:26
1	Melbourne University	5:01	5:13	5:25	5:37	5:48	5:58	6:08	6:18
13	Federation Square	5:12	5:24	5:36	5:48	5:59	6:09	6:16	6:29
14	Arts Centre	5:14	5:26	5:38	5:50	6:01	6:11	6:21	6:31
16	Southbank Blvd & St Kilda Rd	5:15	5:27	5:39	5:51	6:02	6:12	6:22	6:32
32	South Melbourne Beach	5:27	5:39	5:51	6:03	6:14	6:24	6:34	6:54

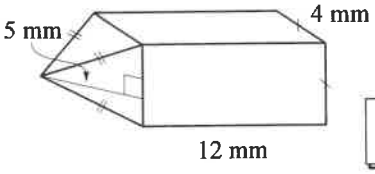
23. [Perimeter / Area] *

The sport of fencing uses a rectangular space with an area of 28 m². What is the perimeter of this space if the length measures 14 m?

m

24. [Surface Area / Volume] *

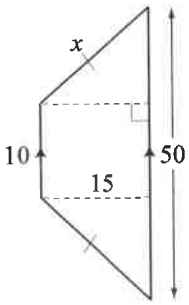
Find the total surface area of the obelisk.



mm²

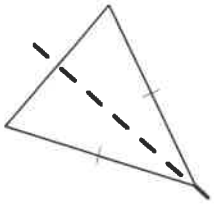
25. [Pythagoras / Trigonometry] *

Find the missing side length in this trapezium.



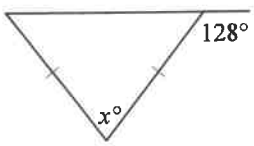
26. [Shapes]

Draw and name the shape formed if the triangle is folded along its axis of symmetry.



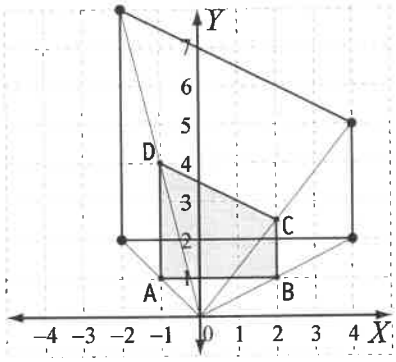
27. [Angles] *

Find the value of $x°$.



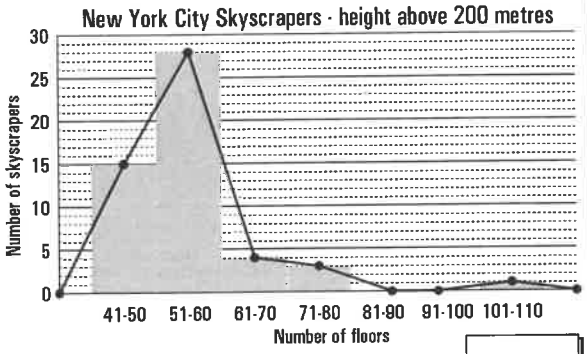
28. [Exploring Geometry]

Find the scale factor of enlargement for the trapezium ABCD.



29. [Statistics]

How many New York City skyscrapers with a height above 200 m have more than 60 floors?



30. [Probability] *

A bag contains 50 balls, each marked with a number from 1 to 50. A ball is drawn from the bag at random. What is the probability that the number drawn is not a multiple of 5?

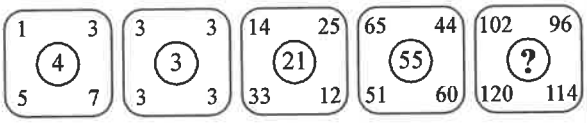
[Give your answer as a decimal.]

31. [Problem Solving 1] *

A 72-page magazine is made up of 18 sheets which have been folded over and stapled down the middle. Pages 1, 2, 71, 72 are on the same sheet. Pages 35, 36, 37, 38 are on the same sheet. What numbers are on the same sheet with 19?

32. [Problem Solving 2] *

The central number is determined by the same rule in each of these shapes. What is the missing number?



MATHS MATE 10

Term 2 - Sheet 5

Name: .....

Due Date: ...../...../.....

Parent's Signature: .....

1. [Long ×,÷] *

$345 \div 15 =$

2. [Decimal +,–] *

$3.5 + 14.02 - 8 =$

3. [Decimal ×,÷] *

$7.34 \times 20 =$

4. [Fraction +,–] *

$\frac{3}{5} + \frac{3}{10} =$

5. [Fraction ×,÷] *

$4 \div \frac{2}{3} =$

6. [Percentages] *

120% of 500 =

7. [Decimals / Fractions / Percentages]

Write 10% as a decimal.

8. [Integer +,–] *

$(-16) + (+13) + (-15) =$

9. [Integer ×,÷] *

$(+10) \times (20) \div (-2) =$

10. [Rates / Ratios] *

Find the missing term in the proportion:

$\frac{33}{b} = \frac{9}{6}$ $\quad b =$

11. [Indices]

Simplify $8b^2 \times 2b^2$

12. [Square Roots] *

$\sqrt{36} \times \sqrt{36} =$

13. [Exploring Number] *

$(10 - 4)^2 \div (30 - 12) =$

14. [Applied Number] *

A jellyfish is 95% water. If the water in this jellyfish weighs 190 kg, what is its total weight in kilograms?

15. [Number Patterns]

Complete the pattern:

$-2048 , 512 , -128 , 32 ,$ ____ , ____

16. [Expressions]

Simplify $t^2 + 4t^2 - 2t$

17. [Substitution] *

If $y = x(x - 8)$, find y when $x = 8$

18. [Expansion] *

Expand and simplify

$n(3n - 4) + 2n$

19. [Factorisation]

Factorise

$-2t^2 - 8t$

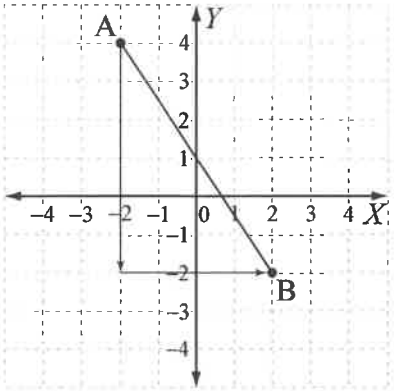
20. [Equations] *

Solve for x: $10 - x = \frac{3x}{2}$

21. [Graphs & Functions] *

Find the gradient of the line joining the points A(–2,4) and B(2,–2).

[Use the formula: gradient = $\frac{\text{vertical rise}}{\text{horizontal run}}$]



QUOTE OF THE WEEK: Human relations are something we always wish we had. P. K. Shaw

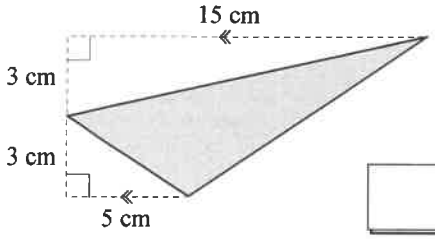
22. [Units of Measurement / Time] *

Express in centimetres:

2 m and 380 mm = ____

23. [Perimeter / Area] *

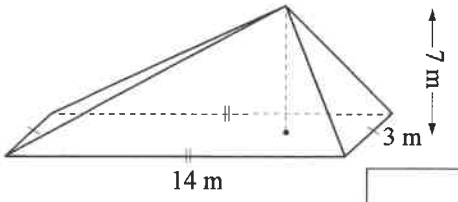
Find the area of the obtuse triangle.



____ cm^2

24. [Surface Area / Volume] *

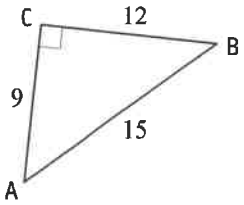
Using $V = \frac{A_b h}{3}$ find the volume of the rectangular pyramid.



____ m^3

25. [Pythagoras / Trigonometry] *

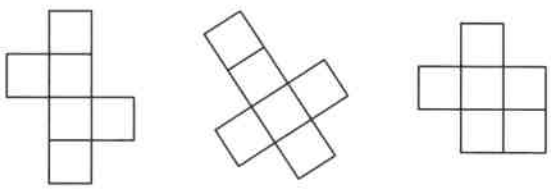
Calculate the value of sin A in this triangle.



____

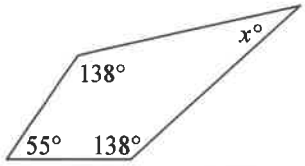
26. [Shapes]

Circle the net that **cannot** be folded to make a model of a cube.



27. [Angles] *

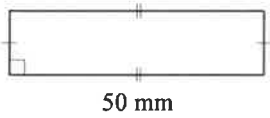
Find the value of $x°$.



____

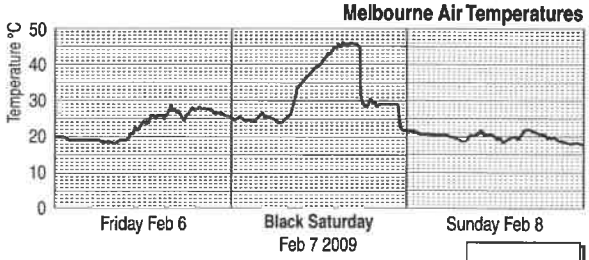
28. [Exploring Geometry]

Redraw the rectangle to scale and estimate the length of its diagonal.



29. [Statistics]

What was the maximum temperature on Friday February 6th, the day before Black Saturday?

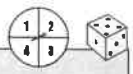


____

30. [Probability] *

A standard die is tossed, and a spinner labelled 1, 2, 3 and 4 is spun. What is the probability of obtaining at least one odd number when the die is tossed and the spinner is spun once?

[Complete the table.]



Possible outcomes		Die 1	2	3	4	5	6
Spinner	1	(1,1)	(1,2)				
	2	(2,1)					
	3	(3,1)					
	4						

____

31. [Problem Solving 1] *

The ratio of \$10 notes to \$20 notes in Luke's wallet is 4 : 5. If he has twenty-seven notes altogether, what is the total value of the twenty-seven notes?

\$ ____

32. [Problem Solving 2] *

A mother is 7 times as old as her son. In 5 years time she will be 4 times her son's age. How old is the mother now?

____

Master Maths 10 Worksheet 65
Data 1

65

Name: _____

1. Give an example of statistical data that would be best obtained by:
(a) observation

_____

(b) questionnaire

_____

2. Use an example to explain the difference between ***population*** and a ***sample*** when referring to statistical data.

_____

_____

_____

_____

_____

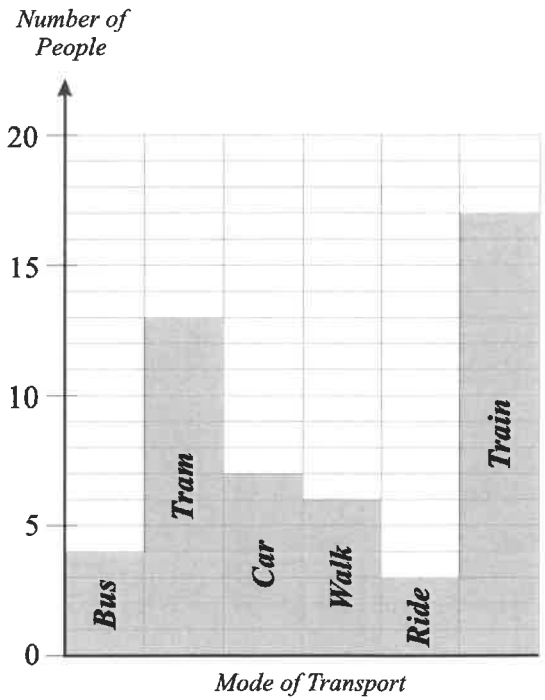
3. A community of 3500 people are to be surveyed. What is the minimum number of people that should be surveyed for the results to be acceptable?

4. There were 23 560 people at a concert. The ages of 200 of these people were recorded and 125 of them were younger than 20.
(a) Is this an adequate sample size for statistical purposes?

(b) What percentage of the sample were younger than 20?

(c) Based on these figures, how many of the people at the concert were younger than 20?

5. There were 650 people who worked in a retail store. 50 of the workers were asked what transport they used to get to work each day. The results are shown on the graph below.



(a) Based on these figures, how many of the workers in the store used each of the modes of transport to get to work?

Transport	Number
Bus	
Tram	
Car	
Walk	
Ride	
Train	

(b) What percentage of the workers used public transport to get to work?

Master Maths 10 Worksheet 66
Data 2

66

Name: _____

1. Give an example of each of the following types of data.

(a) ***continuous numerical***

_____

(b) ***discrete numerical***

_____

(c) ***categorical***

_____

2. A number of people were asked the type of transport they used on their last holiday. The tally sheet below shows the results.

Transport to last holiday	Tally
Car	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |||
Aeroplane	𝍸 𝍸 𝍸 𝍸 ||
Bus	𝍸 𝍸 |||
Train	𝍸 𝍸 𝍸 𝍸 𝍸 |||
Ship	𝍸 𝍸 𝍸 |

(a) How many people were surveyed?

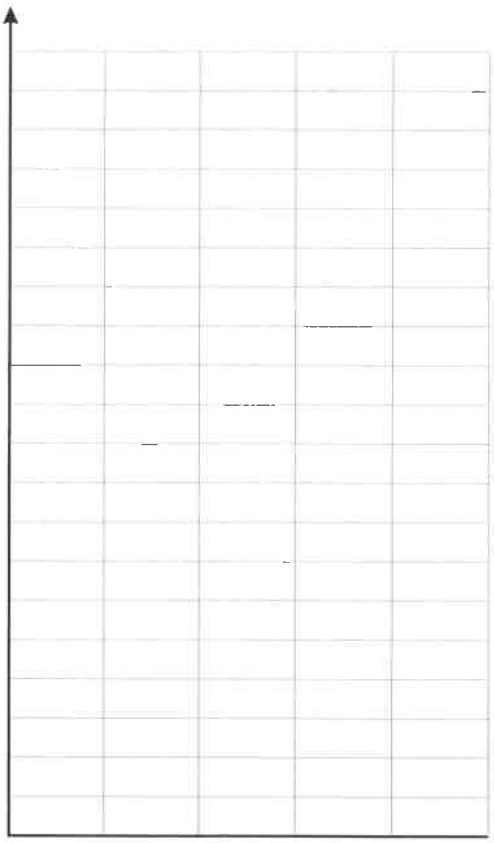
(b) What percentage of the people used each type of transport?
Give answers correct to one decimal place.

Transport to last holiday	Percentage
Car	
Aeroplane	
Bus	
Train	
Ship	

(c) If this information is to be displayed on a pie chart, what angle would be used for each section?
Give answers correct to one decimal place.

Transport to last holiday	Angle on Pie Chart
Car	
Aeroplane	
Bus	
Train	
Ship	

(d) Complete the column graph below displaying this information.



Master Maths 10 Worksheet 68
Mean, Mode and Median 1

68

Name: _____

1. Find the mean, mode and median for each of the following sets of numbers.
Give answers correct to one decimal place where appropriate.

(a) 8 10 11 11 12 12 12 14 14 16 18

mean	mode	median

(b) 13 15 16 17 17 17 18 19 20 23 25 28

mean	mode	median

(c) 23 26 19 15 17 28 27 19 14 20 32

mean	mode	median

(d) 24 23 17 21 32 25 35 29 40 44 22 46

mean	mode	median

2. The maximum temperature (°C) in a town was recorded each day for two weeks. These temperatures are shown below.

21 25 17 19 27 30 33 20 28 35 39 38 32 22

(a) What is the mean maximum temperature? ☐

(b) What is the median maximum temperature? ☐

3. Find the mean, mode and median for the data shown in this frequency table.
Give answers correct to one decimal place where appropriate.

Value x	*Frequency* f	*Cumulative Frequency*
33	5	
34	9	
35	14	
36	11	
37	7	
total (N)		

mean	mode	median

4. Complete the frequency table for the data below and find the mean, mode and median.
Give answers correct to one decimal place where appropriate.

15 16 17 16 18 19 16 17 16 16 16 19 18 17
17 15 16 19 18 15 17 17 18 19 16 15 17 18
16 15 18 17 18 15 16 17 16 18 17 18 17 17

Value x	*Frequency* f	*Cumulative Frequency*
total (N)		

mean	mode	median

Master Maths 9 Worksheet 86
Stemplots

86

Name: _____

1. For the following data:
(a) construct a non-ordered stemplot
(b) construct an ordered stemplot

15, 25, 23, 19, 34, 27, 30, 26, 18, 21, 42, 36, 41

(a) non-ordered stemplot (b) ordered stemplot

Stem	Leaf
1	
2	
3	
4	

Stem	Leaf
1	
2	
3	
4	

2. The people in a restaurant were asked their ages. These ages are listed below.

27, 34, 21, 33, 45, 26, 30, 20, 40, 49, 18, 19, 46, 51, 42, 37, 53, 41, 33, 29, 38, 20, 50, 27, 39, 22

(a) Construct a non-ordered stem plot

(b) Construct an ordered stemplot.

Stem	Leaf

(c) What was the age of the oldest person in the restaurant? ☐

(d) What is the age of the youngest person in the restaurant? ☐

(e) What is the range of ages? ☐

(f) How many people were in the restaurant? ☐

(g) What is the mean age? (one decimal place) ☐

(h) What is the median age? ☐

3. The losing and winning scores for 12 netball games are shown below.

Losing scores: 23, 29, 38, 18, 42, 36, 20, 45, 36, 40, 22, 19

Winning scores: 58, 47, 63, 51, 49, 68, 39, 51, 46, 60, 41, 33

(a) Construct an ordered back-to-back stemplot for this data.

Leaf	Stem	Leaf

(b) What is the mean losing score? (one decimal place) ☐

(c) What is the mean winning score? (one decimal place) ☐

(d) What is the median losing score? ☐

(e) What is the median winning score? ☐

(f) Is it possible to calculate, from the stemplot, the mean winning margin? (Give reason)

_____

_____

_____

Master Maths 9 Worksheet 87
Boxplots

87

Name: _____

1. Under each set of numbers below construct a boxplot clearly showing the median, Q_1, Q_3, smallest number and largest number.

(a) 4, 6, 8, 11, 13, 16, 18, 20, 23, 28, 29

(b) 9, 13, 16, 18, 19, 21, 21, 25, 26, 27

(c) 21, 23, 25, 26, 28, 29, 30, 33, 35, 37, 38, 40

(d) 26, 19, 37, 25, 30, 18, 27, 39, 21, 33

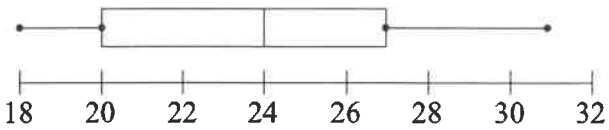
2. State the interquartile range for each boxplot from question 1.

(a) ☐ (b) ☐ (c) ☐ (d) ☐

3. For the data shown in this stemplot construct a boxplot clearly showingthe median, Q_1, Q_3, smallest number and largest number.

Stem	Leaf
1	4 5 7 7 9
2	2 3 4 5 5 8 9
3	0 1 3 3 5 7 9
4	0 1 2 2

4. The boxplot below shows the number of cars that passed over a point in a road every minute.



From this data:

(a) What was the most number of cars that passed over the point in the road in a minute? ☐

(b) What was the least number of cars that passed over the point in the road in a minute? ☐

(c) What was the median number of cars that passed over the point in the road in a minute? ☐

Alphabet Challenge Year 9s and 10s

Your name is your workout.

Each letter equals **one** exercise. Complete the workout. Repeat this workout at least 3 times a week
(Email a time-lapse video of your workout to your respective PE teacher to receive a token)
Want to step it up a notch? Do your middle name/last name? Do your father's/mother's name.
Can you do the entire alphabet?
Let's see how much you can do

A = 30 Arms Circle (15 Clockwise + 15 Anti-Clockwise)

B = 10 Burpees (advance: push up at the bottom)

C = 15 Crunches

D = 10 Chairs Dip Bent Legs (advance: straight legs)

E = 30 Seconds Elbow Plank

F = 30 Seconds Hold Weighted Front Arm Raised (1 bottle of 1l for each arm)

G = 20 Glute Bridge (Both Legs)

H = 10-30 Seconds Handstand (back against the wall)

I = 10 In-And-Out Squats

J = 10 Jumping Squats

K = 10 Alternate Legs Front Kicks

L = 10 Lying Leg Raise

M = 20 Mountain Climbers

N = 20 Side Lunges (10 each side)

O = 20m Outside Sprint

P = 30 Seconds Plank

Q = 20 Bicycle Crunches

R = 30 Rope Skipping/Shadow Skipping (skipping without rope motion)

S = 20 Star Jump

T = 20 Russian Twists

U = 10 Push Ups/Knee Pus-Up/Bench Push-Ups

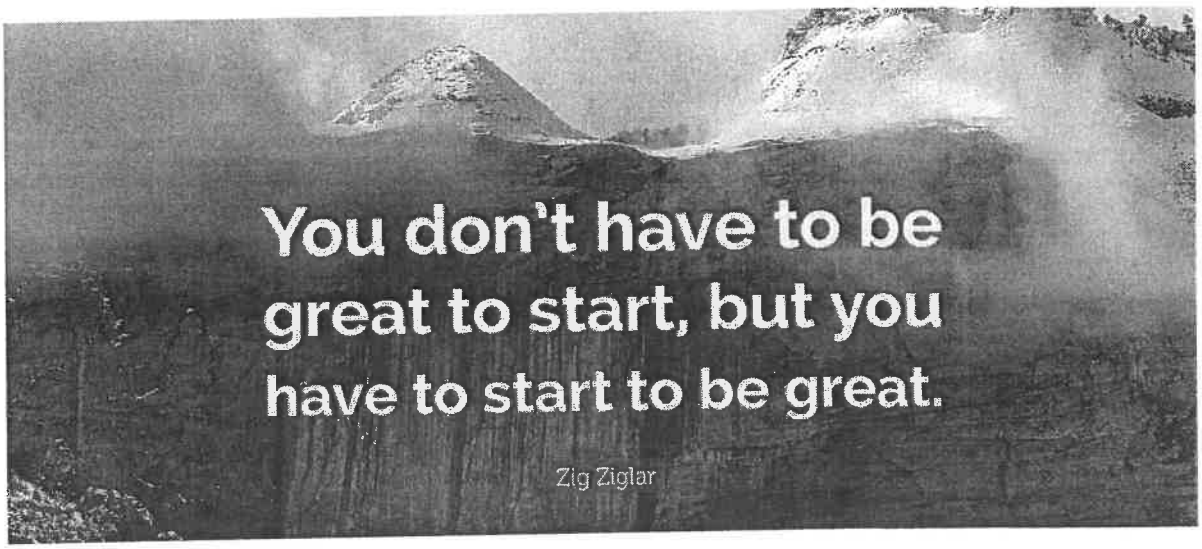
V = 10-30 Seconds V-Sit Hold &

W = 1-Minute Wall Sit

X = 30 Calf Raises

Y = 3 Laps of Hop Scotch

Z = 10 Meters Crab Crawlin



Y 10

PACK 4 CHEMISTRY – Types of chemical reactions

LESSONS

Lesson 1	▪ Combination (Composition = Synthesis) and Decomposition reactions – Read the features and examples. The focus is to be able to identify these types of reactions more than predict them. Study the examples ▪ Classify the reactions provided and balance them pg. 55
Lesson 2	➢ Single and Double displacement (= replacement) – Read the features of these reactions and familiarise with the structure and how the products result. Study the example provided (page 56). ➢ Exercises: Classify the reactions (Distinguish between one type and the other) and balance the reactions.
Lesson 3	o Group of exercises on types of chemical reactions. A mixture of few of them (page 59) o Classify them o Balance 5 of them.
Lesson 4	✓ Group of exercises on types of chemical reactions. A mixture of few of them (page 60) ✓ Classify them ✓ Balance 5 of them
Lesson 5	❖ One step further: Find the products (page 61 and 62) of these reactions grouped by type. Follow the typical structure of the reactions and how to form the products. ❖ Balance one equation in every group
Lesson 6	⇩ Precipitation reactions (the majority of these reactions are single and double displacement). Read the theory and learn how to use the solubility rules. ⇩ Check how can precipitation be predicted using the solubility rules sheet. ⇩ Do the 5 exercises.

TO GET ALL THE EXERCISES RIGHT IS NOT THE TARGET.

IF YOU GET STUCK WITH ANY, LEAVE IT AND DO ANOTHER ONE. IT IS NOT NECESSARY TO DO ALL OF THEM, BUT QUANTITY PREPARES QUALITY AND HELPS EXPERTISE.

JUST HAVE A GO. THIS ATTITUDE ALREADY WILL PROVIDE YOU WITH STRENGTH

Types of Chemical Reactions

Introduction

- Chemical reactions can be categorised into general types, based on the way atoms and molecules are _____ during the reaction.
- Classifying chemical reactions can make it possible to predict _____ of reactions.

Combination (Synthesis) Reactions

- Combination reactions involve _____ reactants combining to form _____ product.

- They can be generalised by the following equation:

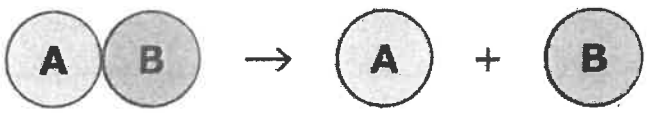
Examples

$H_2\ (g) + O_2\ (g) \rightarrow H_2O\ (l)$

$Li_2O\ (s) + CO_2\ (g) \rightarrow Li_2CO_3\ (s)$

Decomposition Reactions

- Decomposition reactions involve _____ reactant breaking down to form _____ products.



- They can be generalised by the following equation:

Examples

$Mg_3N_2\ (s) \rightarrow Mg\ (s) + N_2\ (g)$

$NH_4NO_3\ (s) \rightarrow N_2O\ (g) + H_2O\ (l)$

CLASSIFY THE FOLLOWING CHEMICAL EQUATIONS AS COMPOSITION (=SYNTHESIS=COMBINATION) OR DECOMPOSITION. ONCE YOU DID THAT, BALANCE THE EQUATIONS IF THEY ARE NOT.

1) $N_2 + H_2 \rightarrow NH_3$ _____

2) $KClO_3 \rightarrow KCl + O_2$ _____

3) $H_2 + O_2 \rightarrow H_2O$ _____

4) $P + O_2 \rightarrow P_2O_5$ _____

5) $Ag_2O \rightarrow Ag + O_2$ _____

6) $H_2O + O_2 \rightarrow H_2O_2$ _____

7) $Na + Cl_2 \rightarrow NaCl$ _____

8) $NaClO_3 \rightarrow NaCl + O_2$ _____

9) $Na + Br_2 \rightarrow NaBr$ _____

10) $HgO \rightarrow Hg + O_2$ _____

Types of Chemical Reactions

PRECIPITATION REACTIONS

Single Displacement (Single Replacement) Reactions

- Single displacement reactions involve an _____ and a _____ reacting to form a different _____ and _____.

element-1 + compound-1 → compound-2 + element-2

- They can be generalised by the following equation:

____ + ____ → ____ + ____

Examples

$Zn\ (s) + Cu(NO_3)_2\ (aq) \rightarrow Zn(NO_3)_2\ (aq) + Cu\ (s)$

$Ca\ (s) + HBr\ (aq) \rightarrow CaBr_2\ (aq) + H_2\ (g)$

Double Displacement (Double Replacement) Reactions

- Double displacement reactions involve two _____ reacting to form two different _____.

compound-1 + compound-2 → compound-3 + compound-4

- They can be generalised by the following equation:

____ + ____ → ____ + ____

Examples

_____ reactions – two soluble salts reacting to form an insoluble salt:

$AgNO_3\ (aq) + NaCl\ (aq) \rightarrow AgCl\ (s) + NaNO_3\ (aq)$

_____ reactions – an acid and a base reacting to form a salt and water:

$H_2SO_4\ (aq) + NaOH\ (aq) \rightarrow Na_2SO_4\ (aq) + H_2O\ (l)$

CLASSIFY THE FOLLOWING CHEMICAL EQUATIONS AS SINGLE DISPLACEMENT OR DOUBLE DISPLACEMENT. AFTER CLASSIFIED, BALANCE THE EQUATION.

1) $NaCl + F_2 \longrightarrow NaF + Cl_2$ _____

2) $Pb(OH)_2 + HCl \longrightarrow H_2O + PbCl_2$ _____

3) $AlBr_3 + K_2SO_4 \longrightarrow KBr + Al_2(SO_4)_3$ _____

4) $K + MgBr \longrightarrow KBr + Mg$ _____

5) $NaBr + CaF_2 \longrightarrow NaF + CaBr_2$ _____

6) $ZnS + AlP \longrightarrow Zn_3P_2 + Al_2S_3$ _____

7) $Al + Fe_3N_2 \longrightarrow AlN + Fe$ _____

8) $BF_3 + Li_2SO_3 \longrightarrow B_2(SO_3)_3 + LiF$ _____

9) $CuCl_2 + H_2S \longrightarrow CuS + HCl$ _____

10) $Cl_2 + NaBr \longrightarrow NaCl + Br_2$ _____

Types of Chemical Reactions

1. Classify the following reactions as one of the following types.

combination	*decomposition*	*single displacement*	*double displacement*	*combustion*

(a) hydrogen peroxide → oxygen + water _____

(b) magnesium + nitrogen → magnesium nitride _____

(c) hydrochloric acid + potassium hydroxide → potassium chloride + water _____

(d) chlorine + sodium bromide → sodium chloride + bromine _____

(e) aluminium oxide → aluminium + oxygen _____

(f) bromine + potassium iodide → potassium bromide + iodine _____

(g) ethane + oxygen → carbon dioxide + water _____

(h) silver sulfide → silver + sulfur _____

(i) lithium oxide + carbon dioxide → lithium carbonate _____

(j) propane + oxygen → carbon monoxide + water _____

(k) calcium chloride + potassium hydroxide → calcium hydroxide + potassium chloride _____

(l) aluminium + nitric acid → aluminium nitrate + hydrogen _____

Types of Chemical Reactions

2. Classify the following reactions as one of the following types.

combination	*decomposition*	*single displacement*	*double displacement*	*combustion*

(a) $S_8\ (s) + O_2\ (g) \rightarrow SO_2\ (g)$ _____

(b) $Pb(NO_3)_2\ (aq) + KI\ (aq) \rightarrow PbI_2\ (s) + KNO_3\ (aq)$ _____

(c) $Zn\ (s) + Pb(NO_3)_2\ (aq) \rightarrow Zn(NO_3)_2\ (aq) + Pb\ (s)$ _____

(d) $Fe_2O_3\ (s) \rightarrow Fe\ (s) + O_2\ (g)$ _____

(e) $Zn\ (s) + H_2SO_4\ (aq) \rightarrow ZnSO_4\ (aq) + H_2\ (g)$ _____

(f) $CO_2\ (g) \rightarrow C\ (s) + O_2\ (g)$ _____

(g) $H_2\ (g) + O_2\ (g) \rightarrow H_2O\ (l)$ _____

(h) $C_7H_{16}\ (l) + O_2\ (g) \rightarrow C\ (s) + H_2O\ (l)$ _____

(i) $Al\ (s) + O_2\ (g) \rightarrow Al_2O_3\ (s)$ _____

(j) $Fe\ (s) + AgNO_3\ (aq) \rightarrow Ag\ (s) + Fe(NO_3)_2\ (aq)$ _____

(k) $KCl\ (aq) + AgNO_3\ (aq) \rightarrow AgCl\ (s) + KNO_3\ (aq)$ _____

(l) $Fe\ (s) + O_2\ (g) \rightarrow Fe_2O_3\ (s)$ _____

(m) $FeCl_3\ (aq) + KOH\ (aq) \rightarrow Fe(OH)_3\ (s) + KCl\ (aq)$ _____

(n) $Al\ (s) + CuSO_4\ (aq) \rightarrow Cu\ (s) + Al_2(SO_4)_3\ (aq)$ _____

(o) $CO_2\ (g) + H_2O\ (l) \rightarrow H_2CO_3\ (aq)$ _____

(p) $C_4H_{10}\ (l) + O_2\ (g) \rightarrow CO_2\ (g) + H_2O\ (l)$

4. Predict the products of the following combination reactions.

(a) $Mg\ (s) + N_2\ (g) \rightarrow$ _____

(b) $Pb\ (s) + S\ (s) \rightarrow$ _____

(c) $Cu\ (s) + Cl_2\ (g) \rightarrow$ _____

(d) calcium + oxygen → _____

(e) sodium + bromine → _____

5. Predict the products of the following single displacement reactions.

(a) $Zn\ (s) + H_3PO_4\ (aq) \rightarrow$ _____

(b) $Na\ (s) + CuCl_2\ (aq) \rightarrow$ _____

(c) $F_2\ (g) + NaBr\ (aq) \rightarrow$ _____

(d) nickel + copper sulfate → _____

(e) chlorine + potassium iodide → _____

6. Predict the products of the following precipitation (double displacement) reactions.

(For (a) - (c) you may need a solubility chart to help you determine which product is the precipitate.)

(a) $Pb(NO_3)_2\ (aq) + NaOH\ (aq) \rightarrow$ _____

(b) $Li_3PO_4\ (aq) + FeCl_2\ (aq) \rightarrow$ _____

(c) $BaCl_2\ (aq) + Na_2SO_4\ (aq) \rightarrow$ _____

(d) sodium phosphate + calcium chloride →

_____

(e) beryllium fluoride + ammonium carbonate →

_____

Types of Chemical Reactions

7. Predict the products of the following neutralisation (double displacement) reactions.

(a) $HF\ (aq) + Ba(OH)_2\ (aq) \rightarrow$ _____

(b) $HBr\ (aq) + Al(OH)_3\ (s) \rightarrow$ _____

(c) $H_2SO_4\ (aq) + NaOH\ (aq) \rightarrow$ _____

(d) hydrochloric acid + lithium hydroxide → _____

(e) acetic acid + ammonium hydroxide → _____

8. Predict the products of the following complete combustion reactions.

(a) $C_3H_8\ (g) + O_2\ (g) \rightarrow$ _____

(b) $C_5H_{10}\ (l) + O_2\ (g) \rightarrow$ _____

(c) pentane + oxygen → _____

9. Predict the products of the following mixed reactions.

(You will need to identify the type of reaction first.)

(a) $Br_2\ (l) + NaI\ (aq) \rightarrow$ _____

(b) $C_8H_{18}\ (l) + O_2\ (g)$ (excess) → _____

(c) $H_2SO_4\ (aq) + Mg(OH)_2\ (s) \rightarrow$ _____

(d) copper + bromine → _____

(e) aluminium + silver nitrate → _____

The equations for the combination of hydrogen and chlorine are:

hydrogen gas + chlorine gas → hydrogen chloride

H_2 + Cl_2 → 2HCl

The hydrogen chloride gas that is produced is then bubbled through de-ionised water to produce hydrochloric acid.

Precipitation reactions

Occasionally when two clear solutions are mixed together, they react to form an insoluble solid. The solid is said to precipitate (fall) out of the solution. These types of reactions are known as **precipitation reactions**. For example, the scale that builds up in kettles, taps and pipes is solid calcium carbonate ($CaCO_3$) that has precipitated out of the tap water as shown in Figure 6.3.4.

FIGURE 6.3.4 A close-up photograph of a tap with calcium carbonate that has precipitated out of the tap water

Precipitation reactions and solubility

A precipitation reaction occurs when two **soluble** reactants combine to form an **insoluble** product known as the **precipitate**. A precipitation reaction is shown in Figure 6.3.5.

A substance is said to be soluble if it dissolves. For example, sugar is soluble in water. When a soluble substance is dissolved in water, the particles that make up the substance are spread thinly throughout the solution. The particles are so small and so thinly distributed that they cannot be seen with the naked eye. As a result, the solution appears transparent (clear), not cloudy or murky.

In precipitation reactions, particles from two soluble compounds mix together and some stick together to form an insoluble solid. The solid precipitates out of the solution, making it murky. Usually, the solution then clears as the precipitate settles on the bottom or rests at the top.

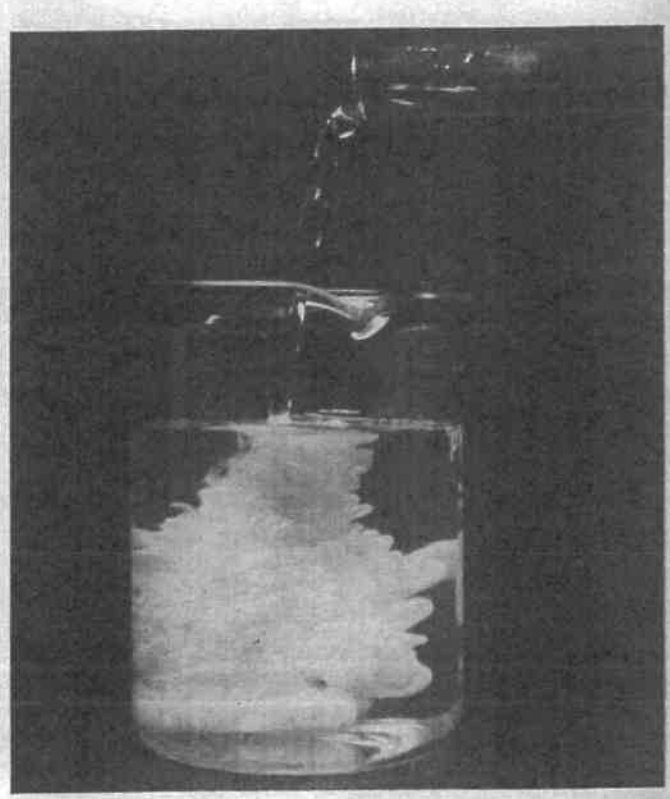


FIGURE 6.3.5 Precipitation reactions occur when two soluble solutions react to produce an insoluble solid.

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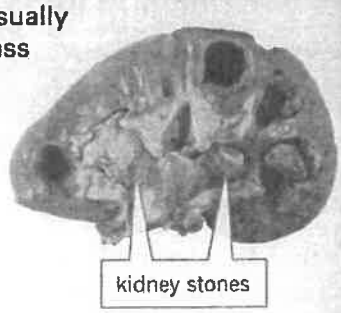
Painful precipitates

Your body is full of dissolved compounds. However, sometimes these compounds precipitate out as hard deposits in the kidneys. These deposits, called kidney stones, are extremely painful. Usually kidney stones will pass out of the body with urine. However, in severe cases, the stones may have to be removed surgically or shattered by intense soundwaves.



kidney stones

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Ionic compounds

Most precipitation reactions happen when solutions of different **ionic compounds** have been mixed.

Ionic compounds are substances made up of a crystal lattice of positive **ions** (**cations**) and negative ions (**anions**). They are often brightly coloured like the ionic compounds shown in Figure 6.3.6.

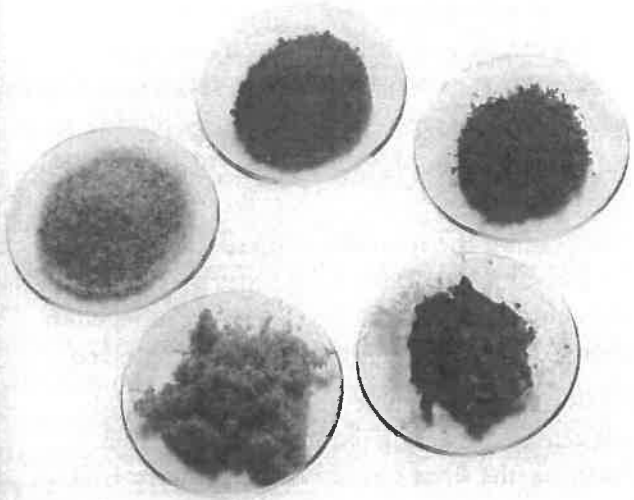

FIGURE 6.3.6 Ionic compounds are normally hard and brittle and come in a wide variety of colours.

The cations that make up the crystal lattice are atoms (or groups of atoms) that have lost electrons and therefore have a positive charge. Anions are atoms (or groups of atoms) that have gained electrons and therefore have a negative charge. Table 6.3.1 lists common cations and anions.

When ionic compounds dissolve, the cations and the anions break away from the crystal lattice and spread evenly throughout the solvent. For example when sodium chloride (NaCl) dissolves in water, the sodium cations (Na^+) and chloride anions (Cl^-) are dispersed throughout the liquid as shown in Figure 6.3.7.

Naming ionic compounds

The name of an ionic compound is simply the name of the cation followed by the name of the anion. For example, barium sulfate ($BaSO_4$) is made up of the barium cation (Ba^{2+}) and the sulfate anion (SO_4^{2-}). In the cases where an atom can form more than one type of ion (such as copper(I), Cu^+, and copper(II), Cu^{2+}), a roman numeral is included in the name of the compound. For example, copper(I) hydroxide (CuOH) or copper(II) sulfate ($CuSO_4$). The roman numeral indicates the charge on the cation.

TABLE 6.3.1 Common cations and anions

		Chemical name	Symbol
Cations	Lost 1 electron	Hydrogen ion	H^+
		Lithium ion	Li^+
		Sodium ion	Na^+
		Potassium ion	K^+
		Ammonium ion	NH_4^+
		Copper(I) ion	Cu^+
	Lost 2 electrons	Calcium ion	Ca^{2+}
		Magnesium ion	Mg^{2+}
		Barium ion	Ba^{2+}
		Copper(II) ion	Cu^{2+}
		Iron(II) ion	Fe^{2+}
	Lost 3 electrons	Iron(III) ion	Fe^{3+}
		Aluminium ion	Al^{3+}
Anions	Gained 1 electron	Fluoride	F^-
		Chloride	Cl^-
		Bromide	Br^-
		Iodide	I^-
		Hydroxide	OH^-
		Nitrate	NO_3^-
		Hydrogen carbonate	HCO_3^-
	Gained 2 electrons	Oxide	O^{2-}
		Sulfide	S^{2-}
		Sulfate	SO_4^{2-}
		Carbonate	CO_3^{2-}
	Gained 3 electrons	Nitride	N^{3-}
		Phosphate	PO_4^{3-}

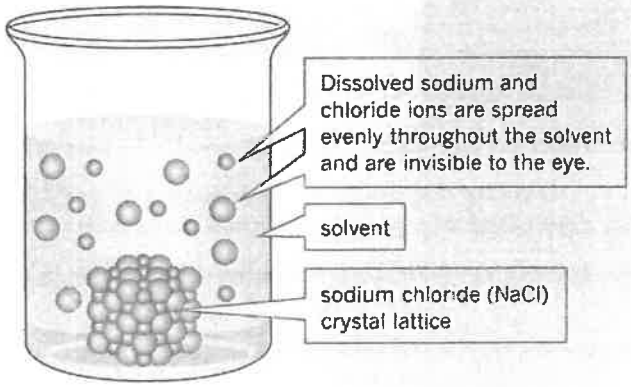

FIGURE 6.3.7 When sodium chloride dissolves, the lattice breaks apart and the ions distribute through the solution.

PRECIPITATION REACTIONS

- Single and double displacement chemical reactions are known for being chemical reactions that occasionally produce PRECIPITATES.
- When two clear solutions are mixed together sometimes, they react to form an INSOLUBLE SOLID.
- The solid is said to precipitate (fall) out of the solution.

- A precipitation reaction occurs when two soluble reactants combine to form an insoluble product known as the PRECIPITATE.

- A substance is said to be SOLUBLE if it dissolves (sugar is soluble in water)

- Scale that builds up in kettles, taps and pipes is solid Calcium Carbonate ($CaCO_3$) that has precipitated out of the tap water.

- Let's see a precipitation reaction and how can we predict its results.

Imagine we have two clear solutions that we are going to mix. One clear solution is Sodium Hydroxide (NaOH) and the other clear solution is Potassium Nitrate (KNO_3). The question is, are we going to get a precipitate or not? Can we predict it?

The reactants are NaOH and KNO_3, what are the products of this reaction?

Following the standard structure of a double displacement,

$$AB + CD \longrightarrow CB + AD$$

The products will result from the swap of the cations between the two reactant compounds. Therefore

$$NaOH + KNO_3 \longrightarrow NaNO_3 + KOH$$

If you check the number of elements in both sides you will see that the equation is already balanced without the need of coefficients.

The next issue is to find out IF THE REACTION PRODUCES OR NOT A PRECIPITATE

To do that we need to use the table of solubility that you have in your textbook on page 250 – Table 6.3.2 (or you can get it from Compass Resources in the Chemistry folder)

What to do?

Step 1: Check the first product, $NaNO_3$ - Nitrate in the Solubility rules list. In the column of positive ions (cations) check the nitrate's cation – Na – It says 'ALL', no exceptions. In the next column says 'SOLUBLE', means all the

nitrates, no matter which one, are soluble. No precipitate will appear from nitrates.

Step 2: Check the second product, KOH – Hydroxide in the solubility rules list. In the column of positive ions (cations) check the hydroxide's cation – K – it says Li, Na, K, Rb, etc soluble. Therefore, this second product is also soluble. No precipitate will appear with this chemical reaction.

But, imagine that instead KOH as product you got $Ca(OH)_2$. In step 2 when you checked cation column, Ca is in the group of 'ALL OTHERS' and it would be LOW SOLUBILITY. So, if the $Ca(OH)_2$ was the product of the chemical reaction a PRECIPITATE would appear in the test tube.

Now you try yourself.

- ✓ Formulate the compounds
- ✓ Predict the products
- ✓ Write the chemical equations
- ✓ Balance the equation, if necessary
- ✓ Predict if Precipitate will appear or not

1) Sodium Bromide + Calcium Carbonate

2) Lithium Nitride + Ammonium Nitrate

3) Hydrogen Bromide + Aluminium Hydroxide

4) Silver nitrate + Copper(II) Sulfate

5) Sodium Carbonate + Potassium Fluoride

Ionic compounds have no overall charge—they are always neutral. This is because the total charge of the cations equals the total charge of the anions. For example, sodium oxide is made up of sodium ions (Na^+) each with a charge of +1 and oxide ions (O^{2-}) each with a charge of –2. Therefore, the chemical formula for sodium oxide is Na_2O. This formula indicates that there needs to be two sodium ions for every oxide ion in the crystal lattice to balance the charge.

Polyatomic ions are ions with more than one atom. Examples are NH_4^+ and SO_4^{2-}. The chemical symbol of these ions is put inside brackets when more than one is needed for a balanced formula. For example, the chemical formula for calcium hydroxide is $Ca(OH)_2$. This indicates that there are two hydroxide ions (OH^-) to balance the charge of each calcium ion (Ca^{2+}).

Predicting precipitation reactions

Scientists use the solubility rules in Table 6.3.2 to predict if a precipitation reaction will occur when two ionic solutions are mixed.

TABLE 6.3.2 Solubility rules

Negative ions (anions)	Positive ions (cations)	Solubility of compounds
Acetate, CH_3COO^-	all	soluble
All	Li^+, Na^+, K^+, Rb^+, NH_4^+	soluble
Chloride, Cl^- Bromide, Br^- Iodide, I^-	Ag^+, Pb^{2+}, Hg^{2+}, Cu^+	low solubility
	all others	soluble
Hydroxide, OH^-	Li^+, Na^+, K^+, Rb^+, NH_4^+, Sr^{2+}, Ba^{2+}	soluble
	all others	low solubility
Nitrate, NO_3^-	all	soluble
Phosphate, PO_4^{3-} Carbonate, CO_3^{2-}	Li^+, Na^+, K^+, Rb^+, NH_4^+	soluble
	all others	low solubility
Sulfate, SO_4^{2-}	Ca^{2+}, Sr^{2+}, Ba^{2+}, Pb^{2+}	low solubility
	all others	soluble
Sulfide, S^{2-}	Li^+, Na^+, K^+, Rb^+, NH_4^+, Be^{2+}, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}	soluble
	all others	low solubility

Using the solubility rules, you can predict what will happen when two ionic solutions are mixed. For example, consider what happens when a potassium chloride solution is mixed with a solution of silver nitrate.

A mixture of potassium chloride (KCl) and silver nitrate ($AgNO_3$) solutions will contain potassium ions (K^+), silver ions (Ag^+), chloride ions (Cl^-), and nitrate ions (NO_3^-).

The positive potassium cations can combine with the negative chloride or nitrate anions to form potassium chloride (KCl) or potassium nitrate (KNO_3). Similarly, the silver cations can combine with the chloride or nitrate anions to produce silver chloride (AgCl) or silver nitrate ($AgNO_3$).

Now, examine the solubility of these four substances. The second row of Table 6.3.2 states that all potassium ionic compounds are soluble. Therefore, potassium chloride and potassium nitrate will stay dissolved.

The fifth row of the table states that all ionic compounds containing nitrate ions are soluble. Therefore, the silver nitrate will remain dissolved.

On the other hand, the third row of Table 6.3.2 shows that ionic compounds with silver cations (Ag^+) and chloride anions (Cl^-) have low solubility. Therefore, it can be predicted that AgCl will precipitate out of the solution as a solid.

Figure 6.3.8 shows this reaction. The chemical equations for this precipitation reaction are:

potassium chloride solution + silver nitrate solution → potassium nitrate solution + silver chloride solid

$$KCl + AgNO_3 \rightarrow KNO_3 + AgCl$$

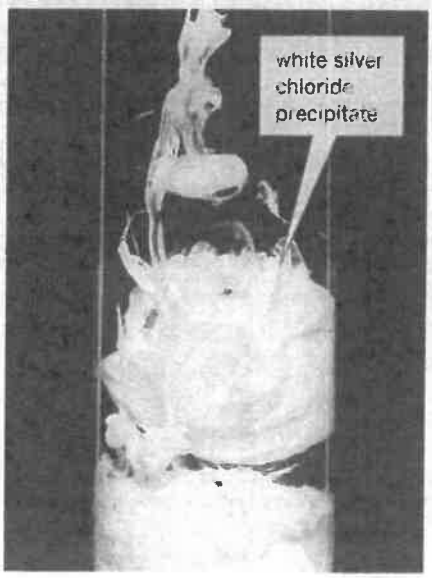

FIGURE 6.3.8 Silver chloride precipitates out as a white solid when potassium chloride is mixed with silver nitrate.