

## PMT Mock Paper Set A

### Answer Key - Section 1

- |    |   |
|----|---|
| 1  | A |
| 2  | A |
| 3  | C |
| 4  | D |
| 5  | B |
| 6  | C |
| 7  | D |
| 8  | C |
| 9  | B |
| 10 | C |
| 11 | E |
| 12 | E |
| 13 | B |
| 14 | D |
| 15 | B |
| 16 | D |
| 17 | E |
| 18 | B |
| 19 | E |
| 20 | D |
| 21 | A |
| 22 | B |
| 23 | C |
| 24 | D |
| 25 | C |
| 26 | D |
| 27 | C |
| 28 | C |
| 29 | B |
| 30 | E |
| 31 | B |
| 32 | D |



## Explained Answers - Section 1

1 **A**

We are told that Ruby wants to buy a laptop and that she has a job that pays £6 per hour, and we need to work out if she will make enough money to buy a laptop for £1500.

The question tells us that Ruby will work 6 hours everyday for the weeks that she is back from her holiday and can work. We need to work out how many weeks this is. We are told Ruby has 12 weeks of summer holidays, she is on holiday for 4 weeks and she needs to buy her laptop one week before her holidays are over. Therefore we need to subtract the weeks she is on holiday for and the one week at the end of the holidays from the total number of weeks of summer holidays Ruby gets:

$$12 - (4 + 1) = 7$$

**Therefore Ruby can work for 7 weeks.**

We are told that everyday Ruby works for 6 hours. We know need to work out the total number days in seven weeks:

$$7 \times 7 = 49$$

**Therefore Ruby works for a total of 49 days.**

We know need to work out the total number of hours Ruby works during those 49 days, we know she works for 6 hours each day:

$$49 \times 6 = 294$$

**Therefore Ruby works for a total of 294 hours.**

$$\begin{array}{r} \phantom{x} \phantom{2} \phantom{9} \phantom{4} \\ \phantom{x} \phantom{2} \phantom{9} \phantom{4} \\ \phantom{x} \phantom{2} \phantom{9} \phantom{4} \\ \hline x \phantom{2} \phantom{9} \phantom{4} \phantom{6} \\ \phantom{2} \phantom{9} \phantom{4} \\ \phantom{2} \phantom{9} \phantom{4} \\ \hline 2 \phantom{9} \phantom{4} \phantom{6} \phantom{4} \end{array}$$

We can now work out the total amount of money Ruby will earn over the summer, by multiplying the total number of hours she works by the amount of money she earns per hour (£6):

$$294 \times 6 = 1764$$

**Therefore Ruby earns £1764 over summer.**

$$\begin{array}{r} \phantom{x} \phantom{2} \phantom{9} \phantom{4} \\ \phantom{x} \phantom{2} \phantom{9} \phantom{4} \\ \phantom{x} \phantom{2} \phantom{9} \phantom{4} \\ \hline x \phantom{2} \phantom{9} \phantom{4} \phantom{6} \\ \phantom{2} \phantom{9} \phantom{4} \\ \phantom{2} \phantom{9} \phantom{4} \\ \hline 1 \phantom{7} \phantom{6} \phantom{4} \phantom{4} \end{array}$$



The question not only asks us if Ruby earns enough but also how much more she needs or how much extra she has. We can see that Ruby earns extra money, we can work out how much by subtracting the price of the laptop (£1500) from the amount of money she earns:

$$1764 - 1500 = 264$$

**Therefore Ruby has enough money to buy the laptop and she has £264 extra.**

2 **A**

Without looking at the options, try and summarise the argument in one statement. I have summarised it into: The number of cases of child asthma increasing may be due to the fact that the amount of physical exercise done by children is falling (heaviest children suffer the most from asthma). By process of elimination, A is the answer.

- B** is incorrect because it generalises the increase in asthma cases among children to the whole of society.
- C** is incorrect because the definition of 'healthy' is not merely restricted to the number of asthma cases and the passage has clearly stated that there is no correlation between the different living environments (city vs country) in determining risk of asthma.
- D** is incorrect because it is not mentioned in the passage why children are doing less physical exercise these days.
- E** is incorrect because it is an absolute statement. Perhaps, children who weigh less may suffer less from asthma attacks.

3 **C**

We are told that Lucy is going to Canada and has already saved up £500 to take with her. We are told that for every hour that Lucy works for her dad's company whilst she is away in Canada she will be paid £6 per hour. The question says that Lucy works for a total of 1050 minutes whilst she is away and we need to work out how many Canadian dollars she will have in total if she doesn't spend her saved up £500 and the money that she earns from working her dad's company.

First we need to convert the total amount of minutes Lucy worked for into hours. We know there are 60 minutes in 1 hour.

$$1050 \div 60 = 17.5$$

Therefore Lucy works for **17.5 hours in total.**

$$\begin{array}{r}
 6 \quad 0 \quad \overline{) \quad 1050} \\
 \underline{- \quad 60} \\
 450 \\
 \underline{- \quad 420} \\
 300 \\
 \underline{- \quad 300} \\
 000
 \end{array}$$



We now need to work out **how much Lucy is paid in total** for working for 17.5 hours for her dad. She gets paid £6 per hour.

$$17.5 \times 6 = 105$$

Therefore Lucy gets paid **£105** in total for working for her dad's company.

$$\begin{array}{r}
 17.5 \\
 \times 6 \\
 \hline
 105.0
 \end{array}$$

We now need to work out how much money Lucy has in total including her £500 she has saved up plus the money she has earned.

$$500 + 105 = 605$$

Therefore Lucy has got a total of **£605**.

The question asks us how many **Canadian dollars** Lucy has in total therefore we know need to convert £605 into Canadian dollars. We are told that £1 equals \$1.69 Canadian dollars.

$$605 \times 1.69 = 1022.45$$

**Therefore Lucy has \$1022.45 Canadian dollars in total.**

$$\begin{array}{r}
 605 \\
 \times 1.69 \\
 \hline
 5445 \\
 36300 \\
 + 60500 \\
 \hline
 1022.45
 \end{array}$$

4 **D**

Identify the conclusion - We should emphasise the role of the environment rather than the role of genetics in the development of human personality so that people will believe it is possible to treat or manage personality disorders. Implied: Emphasising the role of genetics in the development of human personality would mean that people will not believe that personality disorders are treatable.

**A** is incorrect because passage does not mention the extent of treatability of personality disorders.

**B** is incorrect because it is not implied in the passage.

**C** is incorrect because it is not implied in the passage.

**D** is incorrect because it is not implied in the passage.



**5 B**

We are told that Rob has saved £1050 and we are given the amount of interest bank A and bank B give at the end of the year as well as any joining fee they may charge. We need to work out how much money Rob would have at the end of the year if he kept his money in bank A compared to bank B. We will work out the money at the end of the year in each bank separately.

**Bank A:**

We are told that bank A has a joining fee of £20 therefore we need to subtract this from the £1050 that Rob has saved up (the question tells us he will be paying any joining fee from the £1050 he has saved up).

$$1050 - 20 = 1030$$

**Therefore Rob has £1030 left over to put into Bank A.**

**Bank A:**

We are told that bank A will give **8.5%** interest at the end of the year to the total amount in the account if it is **above £1000**. Rob will put **£1030** in his savings account and the question states that he will not spend any of it.

We need to add 8.5% interest to £1030.

$$1030 \times 1.085 = 1117.55$$

**Therefore Rob will have £1117.55 in his savings account at the end of the year if he goes for Bank A.**

				6	0	5
x	1	.	6	9		
<hr/>						
					<sup>4</sup>	
		5	4	4	5	
					<sup>3</sup>	
+	3	6	3	0	0	
+	6	0	5	0	0	
<hr/>						
	<sup>1</sup>	<sup>1</sup>				
	1	0	2	2	.4	5

**Bank B:**

We are told that bank B will give 9.5% interest but only on the first £700 in the savings account, even if you have more money. There is no joining fee this means that Rob will be able to put all of his £1050 into the savings account. Rob will only get interest on £700.



We need to work out how much interest Rob will get on £700:

$$700 \times 0.095 = 66.50$$

Therefore we now know that Rob will get **£66.50** interest on £700

x	0	.	7	0	0	
			3	5	0	0
+	6	3	0	0	0	0
+	0	0	0	0	0	0
+	0	0	0	0	0	0
	0	6	6	.	5	0

We need to work out how much money Rob will have in total **at the end of the year** if he puts his money in a savings account in **Bank B**. We need to add together the total amount of money he puts in to the savings account (**£1050**) and the interest Rob gets on the £700:

$$1050 + 66.50 = 1116.50$$

**Therefore Rob will have £1116.50 in his savings account at the end of the year if he puts his money into Bank B.**

The question asks us **how much more** money Rob will have at the end of the year if he goes for bank A compared to bank B. Therefore we need to subtract the amount that would be in bank B at the end of the year if Rob put his money in bank B from the amount of money that would be in bank A if Rob put his money in bank A:

$$1117.55 - 1116.50 = 1.05$$

**Therefore Rob would earn £1.05 more if he put his money in a savings account Bank A compared to bank B.**



6 C

Try and summarise the passage in one statement. I have summarised it as: The number of cases of violence against judges may be due to the insufficient protection in court and even more so in their offices. By process of elimination, C is the answer.

- A** is incorrect because it is not the main issue of the passage, targeting the people who commit violence rather than targeting the judges.
- B** is incorrect because it is the resolution to the problem rather than concluding the problem/argument itself.
- D** is incorrect because it addresses a possible reason behind why violence against judges is happening rather than concluding the argument.
- E** is incorrect because it is irrelevant.

7 D

The question has told us that each star is made up of 10 matchsticks and that each match box contains 43 matchsticks. We need to work out how many matchstick **boxes** are required to make 52 stars.

First we need to work out how many matchsticks are required to make 52 stars.

$$52 \times 10 = 520$$

**520 matchsticks are required to make 52 stars.**

We now need to work out how many boxes are needed to have 520 matchsticks in total.

$$520 \div 43 = 12.09$$

$$\begin{array}{r}
 \phantom{43} \overline{) 520.09} \\
 \underline{43} \phantom{0} \\
 90 \\
 \underline{86} \\
 400 \\
 \underline{387} \\
 000
 \end{array}$$

Therefore we need **13 boxes** in order to make 52 stars.

Here we need to round up to 13 boxes even though our workings give us 12 boxes. This is because if we had 12 boxes we would only have 516 matches and we need 520.



8 C

Identify the **conclusion** - businesses should provide free snacks rather than expensive incentive packages to keep employees happy. Identify the **evidence** - research shows that 75% of the companies with the highest employee satisfaction provide free snacks. This seems to suggest that free snacks and incentive packages are mutually exclusive and this doesn't have to be the case; it is an **assumption**.

- A** is incorrect because it is questioning the evidence, rather than the logic of the argument. Even if this information was given in the passage, it does not make the conclusion more valid.
- B** is incorrect because it questions the reliability of the evidence rather than the logic of the argument.
- C** *is correct because it shows that free snacks may have complemented the incentive package for employees rather than free snacks and incentive packages being mutually exclusive.*
- D** is incorrect because it questions the reliability of the evidence rather than the logic of the argument.
- E** is incorrect because it brings up a possible disadvantage of free snacks rather than comparing snacks and incentive packages.

9 B

Identify the **conclusion** - a meat-free diet will help you live a longer life. Identify the **evidence** - a woman who lived a long life says it was due to her vegetarian diet. Studies show lifelong vegetarians need less hospital treatment, and are admitted to hospital for shorter periods of time.

This suggests that there is a relationship (positive correlation) between having a vegetarian diet and living a long life, but it does not prove that being a vegetarian **causes** a long life. This suggests **association** between the two factors, but **does not** prove causality.

- A** is incorrect because it is questioning the  **motive** behind wanting to lead a long life rather than addressing the logical reasoning of the argument.
- B** *is correct because there is only a correlation between having a meat-free diet and living longer; there is not enough evidence to conclude that having a meat-free diet causes you to live longer.*
- C** is incorrect because it uses knowledge that was not mentioned in the passage and is introducing a new relationship between life expectancy and number of vegetarians.
- D** is incorrect because it talks about an omnivorous diet, and this was not mentioned in the question. It also **addresses the healthiness of the diets**, rather than the logical reasoning of the argument.







**E** is incorrect because it **finds fault with the evidence** instead of the logical reasoning of the argument.

10 **C**

Identify the conclusion - The company would have to pay up because items were taken from her person. Identify the evidence - insurance company refused to pay initially because policy excludes theft from a car. The missing link would then address that although policy excludes theft from a car does not mean that policy includes theft from the person.

- A** is incorrect because it is on the details of the policy excluding theft from a car rather than addressing how policy excluding theft from a car does not mean that policy includes theft from the person.
- B** is incorrect because it is suggesting a new detail of the policy.
- D** is incorrect because it brings in the element of justice and is irrelevant.
- E** is incorrect because it is focusing on Allyson rather than the policy and is irrelevant.



**11 E**

In this question you need to realise that *when the clock is turned on again the time is not reset*. The question is asking what the time the clock is showing, meaning you do not add on the 194 minutes for which the clock is turned off since it will not be working during this time. It is important to recognise information given in a question that is irrelevant to your answer.

*593 minutes = 9 hours and 53 minutes*

*17 : 35 + 9 hours and 53 minutes = 03 : 28*

We need to add on the 194 minutes as the clock in London is not broken down, therefore we should add it on to the time, as the clock in London will be 194 minutes ahead of the clock in Chicago.

*194 minutes = 3 hours and 14 minutes*

*03 : 28 + 3 hours and 14 minutes = 06 : 42*

Lastly, we need to add 6 hours to find out what the time would be in London which is 6 hours ahead of the time in Chicago (the time in Chicago after 593 minutes have passed)

*06 : 42 + 6 hours = 12 : 42*

- A is incorrect and is a **trap answer**. This is because the question asks what is the time on the clock in **London**. Answer A is what the time would be in Chicago after 593 minutes have passed without adding on the 6 hours for the time in London.
- C is incorrect and is a **trap answer**. This is because 06:42 is the answer you get when you also add on the 194 minutes for which the clock was turned off for. However adding on 194 minutes is incorrect as it mentions in the question that once the clock was turned on **it was not reset**. Also the question asks us what the time is on the clock in London, this answer does not add on the 6 hours required to find the time in London.
- D is incorrect and is a **trap answer**. This is because 09:28 is the time you get when you **do not** add on 194 minutes. We are told that the **clock in Chicago** is broken down for 194 minutes, but the clock in London is not. **Be careful** and **read the question** properly so you do not get mixed up with little details that may end up in you picking a trap answer option.

**Exam Tip** - Be careful with questions that involve time differences. In this question we need to remember that 6 hours need to be added on to the time we have worked out to find out the time in London.



**12 E**

We are told that Alaric wants to make sure he **only eats 2000 calories a day**. We are asked to find out how many calories should Alaric's **dessert** have in it to make sure he only eats 2000 calories that day.

We are told that Alaric's **first meal is 400 calories** and are given the calories of the other meals in relation. We need to work out how many calories Alaric has had in his **second and third meal**, and then we need to work out the **total amount of calories he has had** to work out how many calories his dessert can be for.

First we need to work out how many calories **Alaric's second meal had**. We are told that his second meal had **2.4 times** as many calories as his first meal. Therefore we need to multiply the **400 calories** of his first meal by 2.4 to get the amount of calories in the second meal:

$$400 \times 2.4 = 960$$

**Therefore Alaric's second meal was 960 calories.**

		4	0	0
x		2	.	4
	1	6	0	0
+	8	0	0	0
=	9	6	0	.0

We now need to work out how many calories Alaric's third meal has. We are told that his third meal has  $\frac{1}{4}$  as many calories as his second meal. Therefore we need to multiply the number of calories in Alaric's second meal (which we previously worked out to be 960) by  $\frac{1}{4}$  :

$$960 \times \frac{1}{4} = 240$$

**Therefore Alaric's third meal was 240 calories.**

We know need to add together all of the calories of Alaric's first, second and third meal:

$$400 + 960 + 240 = 1600$$

**Therefore all of Alaric's three meals had a total of 1600 calories.**

We need to subtract the total amount of calories in Alaric's three meals from 2000 calories to work out how many calories can be in his dessert:

$$2000 - 1600 = 400$$

**Therefore Alaric can eat a dessert that has 400 calories in it, this makes sure he only has 2000 calories in a day.**



13 **B**

Identify the conclusion : We can identify individuals who are at risk of developing heart disease. Identify the evidence: A study can help identify the genetic code that makes people more susceptible to early deterioration of the heart. It seems to suggest that by people who have a particular genetic code = people at risk of developing heart disease, ignoring other possible factors that might place people at risk of developing heart disease. Work this out by process of elimination.

- A** is incorrect because it does not not pertain to the logical reasoning behind the argument but to the research methodology.
- C** is incorrect because it is extrapolating beyond the conclusion.
- D** is incorrect because it pertains to the research study instead.
- E** is incorrect because it pertains to the research study.

14 **D**

We are told the amount of pen packs, notebooks and rubber packs that Maisie bought for (£78) and we are told the **ratio** into which the total price is split for each item of stationary.

It is important to note down the **order of the ratio** as the question mentions that the ratio is the **rubber packs: pen packs: notebooks**, it is very easy to assume that the ratio given is in the same order as what is mentioned before in the question as it says she bought pen packs, notebooks and rubber packs.

We need to work out how much it cost Maisie to buy each item of stationary.  
 We need to add the ratio numbers together and divide the total cost of the station buy the answer:

$$1 + 2.5 + 3 = 6.5$$

$$78 \div 6.5 = 12$$

$$\begin{array}{r}
 6 \quad 5 \quad \begin{array}{|l} 0 \quad 1 \quad 2 \\ \hline 7 \quad 8 \quad 0 \\ - \quad 6 \quad 5 \\ \hline 1 \quad 3 \quad 0 \\ - \quad 1 \quad 3 \quad 0 \\ \hline 0 \quad 0 \quad 0 \end{array}
 \end{array}$$

Therefore 1 in the ratio, which is the part for the rubber packs, is £12. Therefore the amount of **rubber packs** Maisie bought cost **£12**.



**Exam Tip** - Reading the question **carefully** and **understanding exactly** what it is asking will help you **save time**.

For example in this question, we know that 10 rubber packs cost £12, however we do not need to spend time working out the cost of an individual rubber pack because the question asks how much it costs to buy one pen pack and 2 notebooks, and not any rubber packs.

We now need to work out how much it costs to buy one pen pack and one notebook.

### Pen packs:

We multiply 12 by 2.5 as we got 12 from dividing the total cost (£78) by the total amount we got by adding the ratio numbers together (6.5). When we do this we get the total amount it cost to buy 6 pen packs because 2.5 in the ratio is for the pen packs.

$$12 \times 2.5 = 30$$

$$\begin{array}{r}
 2 \quad . \quad 5 \\
 \times \quad 1 \quad 2 \\
 \hline
 \phantom{2} \phantom{.} \phantom{5} \phantom{0} \\
 \phantom{2} \phantom{.} \phantom{5} \phantom{0} \\
 + \quad 2 \quad 5 \quad 0 \\
 \hline
 \phantom{2} \phantom{.} \phantom{5} \phantom{0} \\
 = \quad 3 \quad 0 \quad . \quad 0
 \end{array}$$

Therefore it costs **£30** to buy the **6 pen packs**.

We need to find the **cost of one pen pack**, we know the total cost for 6 pen packs is £30 therefore:

$$30 \div 6 = 5$$

Therefore one pen pack costs **£5**.

### Notebooks:

We need to work out the **cost of one notebook** using the same method as we did for the pen packs.

First we need to multiply the part of the ratio for notebooks (3) by 12 to find the total amount it cost Maisie to buy 8 notebooks.

$$12 \times 3 = 36$$

$$\begin{array}{r}
 1 \quad 2 \\
 \times \quad 3 \\
 \hline
 3 \quad 6
 \end{array}$$

Therefore it cost Maisie **£36** to buy **8 notebooks**.



The cost of one notebook, we need to divide the total cost of the 8 notebooks (£36) by the number of notebooks (8).

$$36 \div 8 = 4.50$$

$$\begin{array}{r}
 0 \quad 4 \quad . \quad 5 \\
 8 \overline{) 3 \quad 6} \\
 - \quad 3 \quad 2 \\
 \hline
 4 \quad 0 \\
 - \quad 4 \quad 0 \\
 \hline
 0 \quad 0
 \end{array}$$

Therefore one notebook costs **£4.50**.

The question asks us to work out how much it will cost Maisie to buy one pen pack and 2 notebooks. Therefore we need to add together the price of one pen pack (£5) and the cost of one notebook (£4.50) multiplied by 2.

**Cost of one pen pack and 2 notebooks:**

$$5 + (4.50 \times 2) = 14$$

$$\begin{array}{r}
 4 \quad . \quad 5 \\
 \times \quad 2 \\
 \hline
 9 \quad . \quad 0
 \end{array}$$

Therefore it will cost Maisie **£14.00** to buy one pen pack and 2 notebooks.

**15 B**

Try and summarise the passage in one statement. I have summarised it as: Streaming has been advocated as a way to raise academic performance of the school but a study has proven contrary (study shows that top streamed class students are demoralised and there are no opportunities for improvement for the bottom streamed class students) .

- A** is incorrect because it is a possible inference but not the main conclusion.
- C** is incorrect because it is a possible resolution, not the conclusion.
- D** is incorrect because it is a possible inference but not the main conclusion.
- E** is incorrect because it is an absolute statement and at most, possibly an inference.



16 **D**

In this question we are told to find out which coach company is the **cheapest** for the school to go with for the school trip. To make sure your workings are **clear** and you do not get mixed up with the prices it is good to work out the cost for one company and then the other.

**Coach company A:**

Each coach fits **15 students**, we need to work out how many coaches are required for **128 students**:

$$128 \div 15 = 8.533$$

$$\begin{array}{r}
 15 \overline{) 128.533} \\
 \underline{15} \phantom{0} \\
 8 \phantom{0} \\
 \underline{75} \\
 50 \\
 \underline{45} \\
 50 \\
 \underline{45} \\
 50 \\
 \underline{45} \\
 50
 \end{array}$$

Therefore **9 coaches** are required. We need to round up the answer 8.533 to 9 for all the people to fit in the coaches.

One coach costs **£20**, we need to work out how much it **costs for 9 coaches**:

$$20 \times 9 = 180$$

Therefore 9 coaches cost **£180**.

$$\begin{array}{r}
 20 \\
 \times 9 \\
 \hline
 180
 \end{array}$$

Coach company A gives **10% discount** if **more than 6 coaches** are needed. The school will need 9 coaches therefore the 10% discount applies. We need to find out 10% of £180 and subtract it from £180.

**10% of £180:**

$$180 \times \frac{10}{100} = 18$$

**Cost of 9 coaches with 10% discount:**

$$180 - 18 = 162$$

The total cost for the school to hire company A is **£162**.



### Coach company B:

Each coach fits **25 students**, we need to work out how many coaches are required for **128 students**:

$$128 \div 25 = 5.12$$

$$\begin{array}{r} 005.12 \\ 25 \overline{) 128} \\ \underline{- 125} \phantom{0} \\ 30 \\ \underline{- 25} \phantom{0} \\ 50 \\ \underline{- 50} \phantom{0} \\ 00 \end{array}$$

Therefore **6 coaches** are required.

One coach costs **£25**, we need to work out how much it **costs for 6 coaches**:

$$25 \times 6 = 150$$

$$\begin{array}{r} 25 \\ \times 6 \\ \hline 150 \end{array}$$

Therefore 6 coaches cost **£150**.

Coach company B gives **10% discount** if **more than 6 coaches** are needed, however in this case the discount does not apply as 6 coaches are required not more than 6.

Therefore the total cost to hire coach company B is **£150**.

The cheapest option for the school would be coach company B as it costs **£150** whereas company A costs **£162**.

The question asks us to work out which company is **cheaper** but also **how much cheaper** it is. We need to subtract the cost to hire company B from the cost to hire company A:

$$162 - 150 = 12$$

Therefore it is **£12 cheaper** for the school to hire company B compared to company A.





17 **E**

Identify the conclusion - Film companies should only produce contemporary films or dramas as the audience prefers them, money and time is also saved as compared to producing a historical film. The answer should make the conclusion less valid. B completely opposes 'the audience prefers contemporary films or dramas'.

- A** is incorrect because it does not address historical vs contemporary directly.
- B** is incorrect because it is not relevant.
- C** is incorrect because it strengthens the conclusion.
- D** is incorrect because it does not address historical vs contemporary directly.

18 **B**

The first information we need to consider is the fact that we are told that **before 95 workers** join that company there are **24 business analysts** which is **12%** of the workers in the company. Using this we can work out the **total number of workers** in the company before 95 new workers join.

We can take **X** to be the **total number of workers** in the company before 95 workers join:

$$\begin{aligned}\frac{X \times 12}{100} &= 24 \\ 12X &= 24 \times 100 \\ 12X &= 2400 \\ X &= 2400 \div 12 \\ X &= 200\end{aligned}$$

Therefore in total there are **200 workers** in the company before 95 workers join.

We are also told that **after 95 workers** join there are enough business analysts in the company so that the percentage of business analysts **increases to 20%**.

**The total number workers after 95 workers join:**

$$200 + 95 = 295$$

Therefore there are a total of **295 workers** in the company after 95 workers join.



We need to work out how many business analysts are in the company, if 20% of the workers are business analysts:

$$295 \times \frac{20}{100} = 59$$

Therefore there are **59 business analysts** in the company after 95 workers join.

You need to be careful, as 59 is **not the number of business analysts out of the 95 workers that join**, it is the total number of business analysts in the company **including the 24** business analysts before 95 workers join.

**Number of business analysts out of 95 workers that join:**

$$59 - 24 = 35$$

(we need to take away the **number of business analysts before 95 workers** join from the **total number of business analysts after 95 workers** join to find the number of new business analysts that join)

Therefore there are **35** new business analysts that join.

**Exam Tip** - This question gives us a lot of numbers and information in one go. We need to be able to break down these numbers in order to find out how many new business analysts join the company.

19 **E**

Identify the conclusion - Children who do not exercise much do not achieve their full learning potential. An answer that would strengthen the argument would make a clear correlation between exercise and doing well in academics.

- A** is incorrect because it does not show the link between increased blood flow to the brain and doing well in academics. Some might assume that increased blood flow to the brain means doing well in academics but we cannot be very certain. What we can do is keep this option open and look at the rest of the options for a potentially better and more accurate answer option.
- B** is incorrect because it does not explicitly state that spending leisure time watching television and playing computer games means that children do not exercise much.
- C** is incorrect because it provides an alternative reason for the better academic results of one school compared to another.
- D** is incorrect because it provides an alternative reason for the better academic results of one school compared to another.



20 **D**

For this question you can see many of the answer options have the same beginning or end. In order to save time, if you find one mistake that doesn't match the requirements from the question then cross this answer out as it will be wrong. You do not need to find all the mistakes.

- A** is incorrect because Adam and Lucy will be sitting next to each other. Although they are of the opposite genders both their names have four letters. The questions says that no two people sitting next to each other have the same number of letters in their names.
- B** is incorrect because two girls Eve and Holly are sitting next to each other. Looking at the option we can also see that Sanjiv and Adam (both boys) will also sit next to each other. Sanjiv and Adam also have the same letter 'a' in their names. The question says that no two people sitting next to each other have the same letters in their names.
- C** is incorrect because two girls and two boys are sitting next to each other. Furthermore the two boys Martin and Sanjiv both have the letter 'a' in their names. The two girls Lucy and Holly both have the letter 'y' in their names.
- E** is incorrect as although each person is sat next to someone of the opposite gender and all the names of the people have different letters in their names, Lucy and Adam are sat next to each other and they both have four letters in their names.

21 **A**

Identify the conclusion - British parents are to blame for their teenage children's negative behaviour. Identify the evidence - levels of risky behaviour among teenagers in Britain is much higher than teenagers in most European countries; British parents have less idea of where their children are/what they do on weekends compared to other parents. This shows that the argument is assuming that British parents being less aware of their childrens' whereabouts is resulting in higher levels of risky behaviour among British teenagers.

- B** is incorrect because it does not address the relationship between risky behaviour and parents awareness of teenagers' whereabouts.
- C** is incorrect because it is bringing up a new possibility rather than addressing what is given in the question.
- D** is incorrect because it is pointing out flaws with the evidence rather than addressing the relationship between risky behaviour and parents' awareness of teenagers' whereabouts.



**E** is incorrect because it is pointing out flaws with the evidence rather than addressing the relationship between risky behaviour and parents awareness of teenagers' whereabouts.

**22 B**

Identify the conclusion - forming a retiree volunteer army is not practical. An answer that would weaken the argument would support the conclusion that forming a retiree volunteer army is practical. B provides a reason why forming a retiree volunteer army is practical, directly opposing and weakening the conclusion of the argument that forming a retiree volunteer army is not practical.

- A** is incorrect because it is suggesting a possible outcome of the scheme instead.
- C** is incorrect because it is providing a reason why the scheme should be implemented instead.
- D** is incorrect because the conclusion specifically talks about the practicality of recruiting retirees so while this answer may seem valid at first, it is actually not hitting the point.
- E** is incorrect because while it might imply that retirees have the free time to volunteer, it does not directly address will or want to volunteer.

**23 C**

The equation we need to know for this question is  $S = D \div T$  (*speed = distance ÷ time*).

We need to work out the **time difference** between the journeys if there was **no detour** and if there **was a detour due to weather conditions**.

**Time taken if there was no detour:**

$$S = D \div T$$

$$520 = 4680 \div T$$

$$520 \times T = 4680$$

$$T = 4680 \div 520$$

$$T = 9$$

$$\begin{array}{r}
 5 \quad 2 \quad 0 \quad \overline{) \quad 4680} \\
 \underline{40} \phantom{0} \\
 68 \phantom{0} \\
 \underline{60} \phantom{0} \\
 80 \\
 \underline{80} \\
 0
 \end{array}$$

Therefore it takes the plane **9 hours** to make the journey if there is **no detour**.



### Time taken due to detour:

We need to add on **1040 miles** to the total miles of the flight journey (**4680**):

$$4680 + 1040 = 5720$$

Therefore the total journey when there is a detour is **5720 miles**.

We need to work out how long it takes the plane to **travel 5720 miles, at a speed of 520 mph**:

$$S = D \div T$$

$$520 = 5720 \div T$$

$$520 \times T = 5720$$

$$T = 5720 \div 520$$

$$T = 11 \quad T = 11 \text{ hours}$$

$$\begin{array}{r}
 \phantom{5} \phantom{2} \phantom{0} \phantom{|} \phantom{5} \phantom{7} \phantom{2} \phantom{0} \\
 \phantom{5} \phantom{2} \phantom{0} \phantom{|} \phantom{5} \phantom{7} \phantom{2} \phantom{0} \\
 \phantom{5} \phantom{2} \phantom{0} \phantom{|} \phantom{5} \phantom{7} \phantom{2} \phantom{0} \\
 \phantom{5} \phantom{2} \phantom{0} \phantom{|} \phantom{5} \phantom{7} \phantom{2} \phantom{0} \\
 \phantom{5} \phantom{2} \phantom{0} \phantom{|} \phantom{5} \phantom{7} \phantom{2} \phantom{0} \\
 \hline
 5 \quad 2 \quad 0 \quad | \quad 5 \quad 7 \quad 2 \quad 0 \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \hline
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \hline
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \phantom{0} \phantom{0} \phantom{1} \phantom{1} \\
 \hline
 0 \quad 0 \quad 1 \quad 1 \\
 \hline
 5 \quad 2 \quad 0 \quad | \quad 5 \quad 7 \quad 2 \quad 0 \\
 - \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 \hline
 0 \quad 5 \quad 2 \quad 0 \\
 - \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 \hline
 0 \quad 5 \quad 2 \quad 0 \\
 \hline
 0 \quad 0 \quad 0
 \end{array}$$

Therefore it takes the plane **11 hours** to make the journey when there is a detour.

We need to work out **how much longer** it takes the plane to make the journey when there is a detour compared to when there is no detour. We need to subtract the time it takes the plane when there is no detour from the time it takes the plane when there is a detour:

$$11 - 9 = 2$$

Therefore it takes **2 hours longer** due to the detour than it normally would.

## 24 D

Identify the conclusion - To reduce high rates of accidents along 'dangerous' stretches of road, standards of driving or driving practices should be improved rather than rebuilding these roads. The answer should make this conclusion more valid. The 'wet weather' calls into question driving practices (carefulness).

- A** is incorrect because it weakens the conclusion.
- B** is incorrect because it does not address why improving driving practices is a better solution than rebuilding the roads.
- C** is incorrect because it does not address why improving driving practices is a better solution than rebuilding the roads.
- E** is incorrect because it does not address why improving driving practices is a better solution than rebuilding the roads.





25 C

We are told that **25 people** hire **2 coaches** for a trip, this costs **£2.40 per person** and we need to work out **how many more people** are required for the cost of the coach per person to be **reduced to £2.00**.

We need to first work out the **total cost for the 2 coaches**.

$$25 \times 2.40 = 60$$

Therefore the two coaches cost **£60**.

$$\begin{array}{r}
 2.40 \\
 \times 25 \\
 \hline
 12.00 \\
 + 48.00 \\
 \hline
 60.00
 \end{array}$$

We can now work out how many people should go on the trip for it cost **£2.00 per person**, we can take **X** to be the **new total number of people**:

$$2.00 \times X = 60$$

$$X = 60 \div 2.00$$

$$X = 30$$

$$\begin{array}{r}
 30 \\
 2 \overline{) 60} \\
 \underline{- 60} \\
 00 \\
 \underline{- 00} \\
 00
 \end{array}$$

Therefore if **30 people** went on the trip it person.

would cost £2.00 per

The question asks us how many **more** people should go on the trip. Therefore we need to subtract the number of people who went on the trip when it cost £2.40 per person from the number of people that should go on the trip for it to cost £2.00 per person:

$$30 - 25 = 5$$

Therefore if **5 more people** go on the trip it would cost **£2.00 per person**.



26 **D**

Identify the conclusion - Children should only go to school at the age of 7 and not as early as possible e.g. age 2. Identify the reason - Children who are given formal schooling before they are ready for it may develop anxiety and lower self-esteem. This seems to assume that school = formal schooling.

- A** is incorrect because it only highlights the impracticality of the conclusion.
- B** is incorrect because it is a blanket statement and does not address the assumption.
- C** is incorrect because it does not address the conclusion nor the reason.
- E** is incorrect because it does not address the conclusion nor the reason.

27 **C**

We need to work out the **total amount** it would cost Josh to buy the 50 cups and 30 lemons:

$$5 + 12 = 17$$

Therefore it cost Josh **£17** to buy all the cups and lemons.

We are asked how much does Josh need to sell each cup of lemonade to make a **50% profit**.

First of all we need to find the amount of money Josh needs to make to make a 50% profit. For this we need to find out 50% of £17 and add it onto £17:

$$17 \times \frac{50}{100} = 8.50$$

$$17 + 8.50 = 25.50$$

Therefore Josh needs to make **£25.50** by selling cups of lemonade to make a 50% profit.

In order to find out how much each cup should be sold for we need to **divide £25.50 by the total amount of cups (50)**:

$$25.50 \div 50 = 0.51$$

Therefore **each cup of lemonade** needs to be sold for **£0.51**.

$$\begin{array}{r}
 5 \quad 0 \quad \overline{) \quad 25.50} \\
 \underline{- \quad 25} \phantom{0} \\
 0 \quad 0 \quad 5 \quad 0 \\
 \underline{- \quad 50} \\
 0 \quad 0
 \end{array}$$







We know that a cube is made up of 6 squares, therefore to find the **area of the whole cube** we can multiply the area of square side (2209) by the number of squares a cube has (6):

$$2209 \times 6 = 13254$$

$$\begin{array}{r} \phantom{2209}2209 \\ \times \phantom{6} \\ \hline \phantom{2209}13254 \end{array}$$

Therefore the total area of the cube that needs to be painted is **13254 cm squared**.

We are told that **one paint bottle** paints **1800 cm squared** of area. We need to work out how many bottles will be required to pain the **whole area of the cube** if one bottle paints 1800 cm squared. We need to divide the total area of the cube by the area one paint bottle covers:

$$13254 \div 1800 = 7.363$$

$$\begin{array}{r} \phantom{1800}00007.363 \\ 1800 \overline{) 13254.000} \\ \underline{18} \phantom{00} \phantom{0} \phantom{0} \\ 006540 \\ \underline{54} \phantom{00} \phantom{0} \\ 11400 \\ \underline{18} \phantom{00} \phantom{0} \\ 006000 \\ \underline{36} \phantom{00} \phantom{0} \\ 600 \end{array}$$

Therefore we need **8 paint bottles** to paint the whole cube. We need to round up our answers even though it is not above 0.5 as we need more than 7 bottles to paint the cube, therefore Rob will have to buy 8.

We are asked if Rob has **enough money** to buy all the paint bottles and **how much more money he needs or the amount of spare money he has**. We know that each bottle costs £4.50 and we need to find the cost of all 8 paint bottles:

**Cost of 8 bottles:**

$$8 \times 4.50 = 36$$

$$\begin{array}{r} \phantom{8}4.50 \\ \times \phantom{8} \\ \hline \phantom{8}36.00 \end{array}$$

Therefore the 8 bottles cost **£36**.



Rob has £40 to spend on paint, from our working we can see that the cost of 8 paint bottles needed to paint the whole cube (£36) is less than £40. We now need to work out **how much money Rob has left over after buying the 8 paint bottles:**

$$40 - 36 = 4$$

Therefore he has **£4 spare** left over.

**30 E**

Write out the reasoning of the argument in simplified form: If I do A, B will happen. I can predict A because I know the cause and effect. But no one can predict C. So while A has a cause, C has no cause.

**A** is incorrect.

**B** is incorrect.

**C** is incorrect.

**D** is incorrect.

**31 B**

In this question we need to work out **how much money** each player has **after each game** to work out how much **Rose** has left at the **end of 4 games**. We are told that each player has **£10** to begin with and has to give **£3 to the winner after each game**.

**Game 1:**

**Josh** wins the first game. Therefore **Rose and Anjali** must each **give Josh £3**. At the end of the game **Josh has £16**, **Rose has and Anjali both has £7**.

**Game 2:**

**Rose** wins the second game. Therefore **Josh and Anjali** both need to **give Rose £3**. At the end of the game **Josh has £13**, **Rose has £13** and **Anjali has £4**.

**Game 3 and Game 4:**

**Anjali** wins the third and fourth game therefore **Josh and Rose** need to **give Anjali £6 each** (as they need to give £3 for each game Anjali won, and she won 2). At the end of the third and fourth game **Josh has £7**, **Rose has £7** and **Anjali has £16**.

We now know that **Rose has £7** at the end of the four games.





**Exam Tip** - It is important to not get confused with all the numbers, and therefore **clearly write them out**. One of the ways is to write out the amount of money each player has at the end of each game.

32 D

Identify the conclusion - Public would be less safe with volunteers as compared to experienced, trained police officers. An answer that would weaken the argument would address the comparison between volunteers and police officers and make the conclusion less valid which D does.

- A** is incorrect because it actually strengthens the conclusion.
- B** is incorrect because it does not address the comparison between volunteers and police officers.
- C** is incorrect because it is too general and does not address the comparison between volunteers and police officers.
- E** is incorrect because it is introducing the concept of paid volunteers which is not mentioned in the passage.

