

Independent Study Pack 11.5



Please work through this booklet so that it can be marked and feedback given.

- ✓ Use your own workbook to complete the tasks.
- ✓ Use the booklet to complete the tasks.

Name

VMG

Maths:

Complete 1 hour on Hegarty maths. Your teacher will be able to see what you have completed and give you feedback.



hegartymaths

This extract is from the opening of the novel *Jurassic Park* by Michael Crichton. It was written in 1990. In this section, Roberta Carter, an American doctor stationed in Costa Rica, is disturbed by the arrival of a helicopter.

The tropical rain fell in drenching sheets, hammering the corrugated roof of the clinic building, roaring down the metal gutters, splashing on the ground in a torrent. Roberta Carter sighed, and stared out the window. From the clinic, she could hardly see the beach or the ocean beyond, cloaked in low fog. This wasn't what she had expected when she had come to the fishing village of Bahía Anasco, on the west coast of Costa Rica, to spend two months as a visiting physician. Bobbie Carter had expected sun and relaxation, after two gruelling years of residency in emergency medicine at Michael Reese in Chicago.

She had been in Bahía Anasco now for three weeks. And it had rained every day.

Everything else was fine. She liked the isolation of Bahía Anasco, and the friendliness of its people. Costa Rica had one of the twenty best medical systems in the world, and even in this remote coastal village, the clinic was well maintained, amply supplied. Her paramedic, Manuel Aragón, was intelligent and well trained. Bobbie was able to practice a level of medicine equal to what she had practiced in Chicago.

But the rain! The constant, unending rain!

Across the examining room, Manuel cocked his head. "Listen," he said.

"Believe me, I hear it," Bobbie said. "No. Listen."

And then she caught it, another sound blended with the rain, a deeper rumble that built and emerged until it was clear: the rhythmic thumping of a helicopter. She thought, They can't be flying in weather like this.

But the sound built steadily, and then the helicopter burst low through the ocean fog and roared overhead, circled, and came back. She saw the helicopter swing back over the water, near the fishing boats, then ease sideways to the rickety wooden dock, and back toward the beach.

It was looking for a place to land.

It was a big-bellied Sikorsky with a blue stripe on the side, with the words "InGen Construction." That was the name of the construction company building a new resort on one of the offshore islands. The resort was said to be spectacular, and very complicated; many of the local people were employed in the construction, which had been going on for more than two years. Bobbie could imagine it — one of those huge American resorts with swimming pools and tennis courts, where guests could play and drink their daiquiris, without having any contact with the real life of the country.

Bobbie wondered what was so urgent on that island that the helicopter would fly in this weather. Through the windshield she saw the pilot exhale in relief as the helicopter settled onto the wet sand of the beach. Uniformed men jumped out, and flung open the big side door. She heard frantic

shouts in Spanish, and Manuel nudged her.

They were calling for a doctor.

Checking understanding

Circle the correct answers.

1. On line 2, the writer uses the noun **torrent**. Which definition best matches the word in this context?

[a] a fast-moving stream of water	[b] an angry outburst	[c] an item borrowed from someone else	[d] a puddle
-----------------------------------	-----------------------	--	--------------

2. On line 6, the writer uses the noun **physician**. Which definition best matches the word?

[a] a personal trainer	[b] a scientist	[c] a doctor	[d] a nurse
------------------------	-----------------	--------------	-------------

3. On line 7, the writer uses the adjective **gruelling**. Which definition best matches the word?

[a] poor	[b] extremely tiring and demanding	[c] unpleasant	[d] exciting
----------	------------------------------------	----------------	--------------

4. On line 12, the writer uses the adjective **amply**. Which definition best matches the word?

[a] not enough	[b] just enough	[c] more than enough	[d] enough
----------------	-----------------	----------------------	------------

5. It is set in a tropical location.

True	False
------	-------

6. The clinic is not fit for purpose.

True	False
------	-------

7. The clinic is in an expensive resort.

True	False
------	-------

Improving analysis

The following are extracts from the text. Decide which analysis of the extract is the best one.

8. ...hammering the corrugated roof...

The verb 'hammering' implies that the rain is damaging the roof as it is falling so hard and fast; it is as if the rain is punishing the roof for some reason.	The verb 'hammering' sounds violent and aggressive, which makes the environment around the clinic seem hostile and frightening.	The verb 'hammering' suggests how loudly the rain is falling which suggests it is very difficult for Roberta to do her job properly.
--	---	--

9. ... the helicopter burst through the ocean fog.

The verb 'burst' not only suggests that the helicopter moves suddenly, but also that it is in some way aggressive and disturbing to watch.	The verb 'burst' makes the helicopter seem like a surprise to Roberta, which suggests she is shocked.	The verb 'burst' suggests that the helicopter has been hidden and is now breaking free like a wild animal.
--	---	--

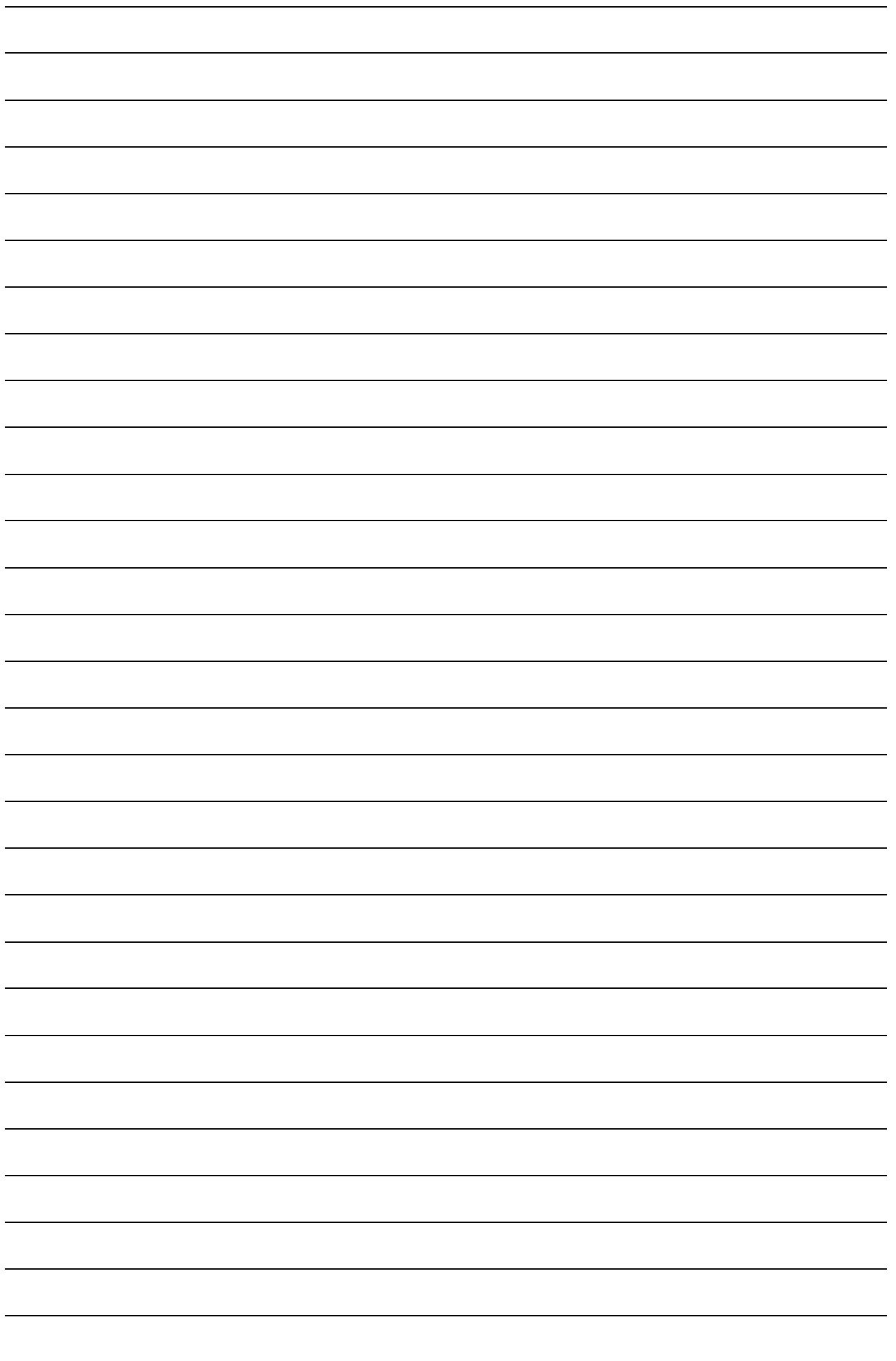
10. They were calling for a doctor.

The short sentence which concludes this extract implies that something awful has happened, and also suggests that Roberta will be directly involved in the ongoing action.	This short sentence creates tension as they want some medical help.	This short sentence, which concludes the extract, creates tension as the reader does not know why they want a doctor and they want to read on to find out.
--	---	--

Writing task: Write the opening of a story entitled 'The Unexpected Arrival'.

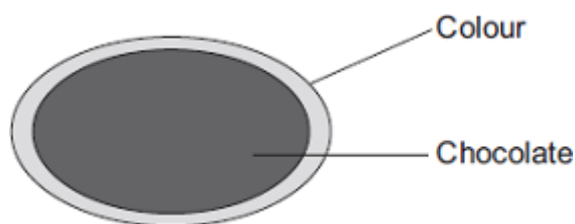
You must:

- Use pathetic fallacy to foreshadow the surprise
- Use dialogue to express surprise
- Have a clear change in tone to highlight the surprise



Q1. Colours are used to coat some chocolate sweets.

Some of these colours are given E-numbers.



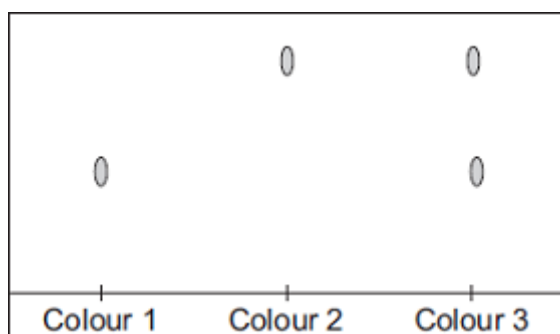
Use the correct word from the box to complete the sentence.

additive	element	fuel
-----------------	----------------	-------------

An E-number is used to identify a permitted food

(1)

(b) Chromatography was used to compare three of the colours used to coat the chocolate sweets.



What do these results tell you about these three colours?

.....
.....
.....
.....

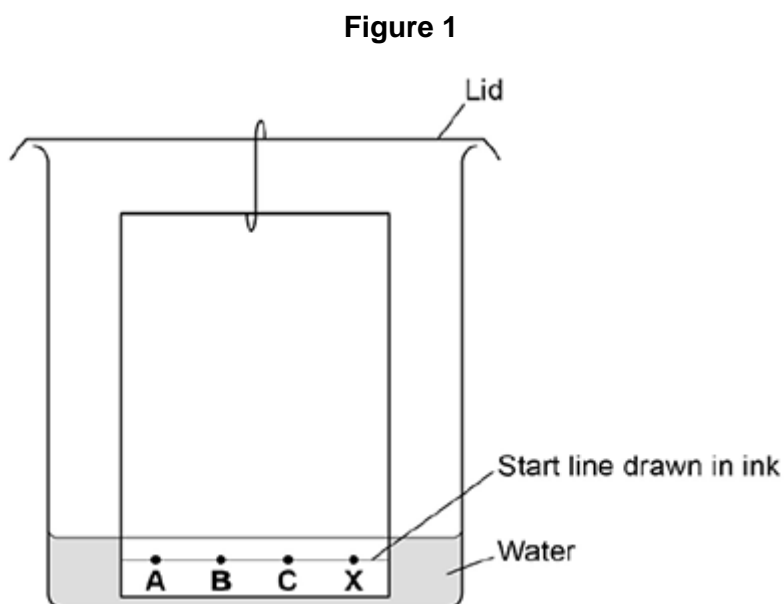
(3)
(Total 4 marks)

Q2.A student investigated a food colouring using paper chromatography.

This is the method used.

1. Put a spot of food colouring **X** on the start line.
2. Put spots of three separate dyes, **A**, **B** and **C**, on the start line.
3. Place the bottom of the paper in water and leave it for several minutes.

(a) **Figure 1** shows the apparatus the student used.



Give **two** mistakes the student made in setting up the experiment.

Tick **two** boxes.

The lid was on the beaker.

The paper did not touch the bottom of the beaker.

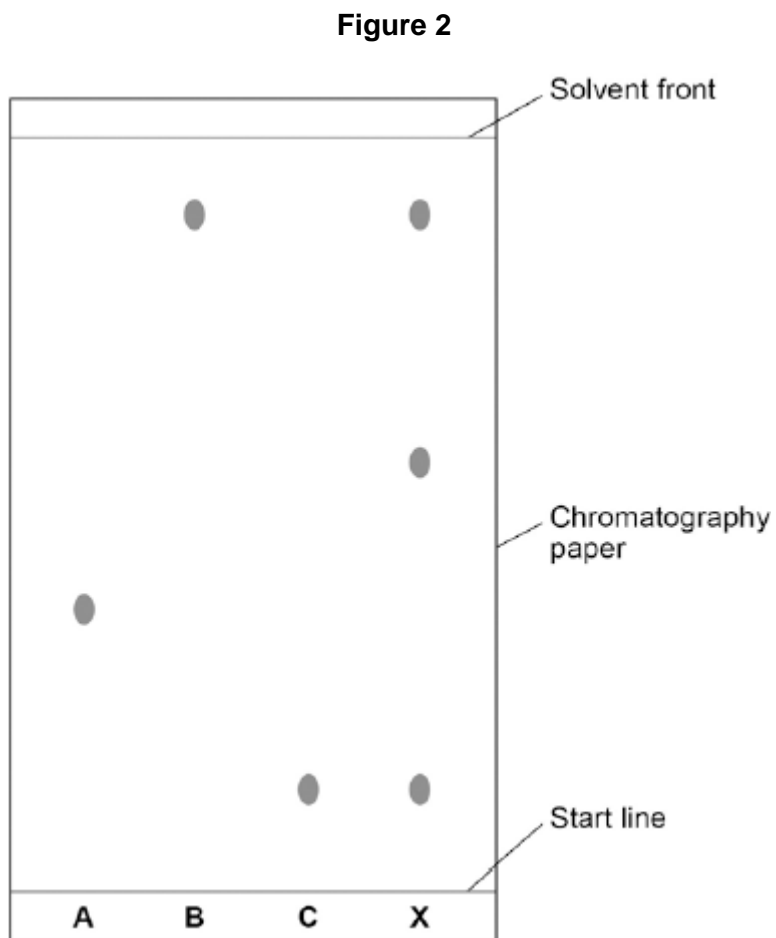
The spots were too small.

The start line was drawn in ink.

The water level was above the spots.

(b) Another student set the experiment up correctly.

Figure 2 shows the student's results.



How many dyes were in **X**?

Tick **one** box.

1	3	4	6
---	---	---	---

(c) Which dye, **A**, **B** or **C**, is **not** in **X**?

Write your answer in the box.

[

(d) Use **Figure 2** to complete the table below.

Calculate the value for R_f for dye **A**.

	Distance in mm
Distance moved by dye A
Distance from start line to solvent front

Use the equation:

$$R_f = \frac{\text{distance moved by dye A}}{\text{distance moved by solvent}}$$

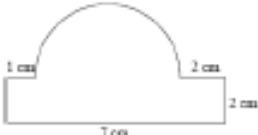
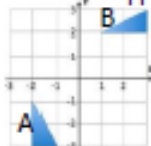
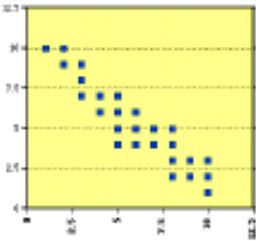
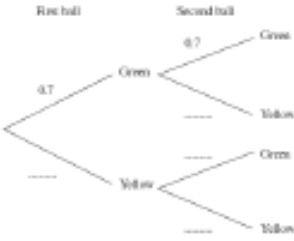
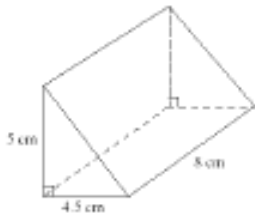
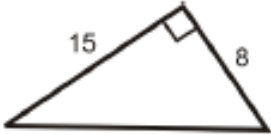
Give your answer to two significant figures.


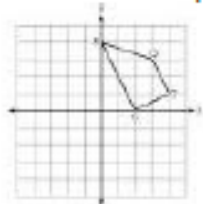
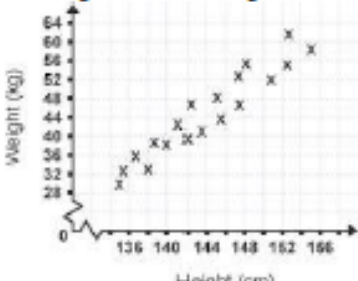


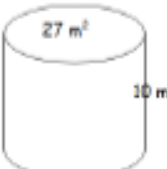
.....
.....
.....

R_f value =

(5)
(Total 9 marks)

Maths:

<p>1. Estimate the following:</p> $\frac{52.7 \times 7.56}{2.49 + 3.49}$	<p>2. Factorise the following expression: $4a^2 + 16ab$</p>																		
<p>3. A scientist mixes colour, acid and water in the ratio 5:4:2, if they use 50ml of water how much colour do they use?</p>	<p>4. What is the area of the following shape?</p> 																		
<p>5. If the probability of picking a green sweet from a giant bag is 0.65, how many of the next 260 sweets would be green?</p>	<p>6. Compare the median and range of the weight of dogs at two different vets below:</p> <p>HealthyPet: 55, 42, 12, 68, 75, 52, 20, 18</p> <p>SuperVet: 20, 16, 48, 58, 46, 61, 63, 66</p>																		
<p>7. Work out $5^2/3 \times 3^3/7$</p>	<p>8. If $c = 15$, $d = 50$ and $e = 20$, calculate $\frac{4c + d}{e} =$</p>																		
<p>9. A rainstorm produced a rainfall of 2 inches per hour. How many hours would it take to get a rainfall amount of one foot?</p>	<p>10. Describe the transformation mapping shape A onto Shape B below.</p> 																		
<p>11. Draw a line of best fit on the scatter graph below.</p> 	<p>12. Complete the tree diagram below and calculate the probability that the balls thrown are different colours:</p> 																		
<p>13. Write $6f^3 \times 4e^2f$ as a single term</p>	<p>14. Solve the following inequality $5 - 2x < 12$</p>																		
<p>15. What is the volume of the prism below?</p> 	<p>16. The table below represents bags of sweets eaten one day by a group of students, what is the mean number of bags eaten.</p> <table border="1"> <thead> <tr> <th>Number of bags</th> <th>Frequency</th> <th></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>10</td> <td></td> </tr> <tr> <td>1</td> <td>15</td> <td></td> </tr> <tr> <td>2</td> <td>20</td> <td></td> </tr> <tr> <td>3</td> <td>5</td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> </tr> </tbody> </table>	Number of bags	Frequency		0	10		1	15		2	20		3	5		Total		
Number of bags	Frequency																		
0	10																		
1	15																		
2	20																		
3	5																		
Total																			
<p>17. A javelin throw was estimated to 48m to the nearest m, what are the upper and lower bounds of the throw?</p>	<p>18. Expand and simplify the following: $(x - 4)(x + 4)$</p>																		
<p>19. Find the length of the missing side.</p> 	<p>20. If the following data was represented on a pie chart, what angle would each sector have for each category?</p> <table border="1"> <thead> <tr> <th>Favourite Animal</th> <th>Frequency</th> <th>Angle</th> </tr> </thead> <tbody> <tr> <td>Dog</td> <td>53</td> <td></td> </tr> </tbody> </table>	Favourite Animal	Frequency	Angle	Dog	53													
Favourite Animal	Frequency	Angle																	
Dog	53																		

1. Round 4.93522 to 3 significant figures.	2. Expand the following $7x^2(3x - 4y)$																						
3. Leeds' shots on target to goals ratio was 5:3 in the Ipswich game. If instead Leeds had scored 12, how many shots on target should they have had?	4. What is the area of the following shape 																						
5. In an experiment, 100 drawing pins were thrown. 64 landed point up, the rest point down. Simplify your answers. What is the relative frequency of a drawing pin landing: i) point up? ii) point down?	6. Compare the test results for English and maths below. <table border="1"> <tbody> <tr> <td>English</td> <td>67</td> <td>73</td> <td>101</td> <td>68</td> <td>66</td> <td>86</td> <td>69</td> <td>86</td> <td>101</td> <td>64</td> </tr> <tr> <td>Maths</td> <td>77</td> <td>78</td> <td>76</td> <td>76</td> <td>78</td> <td>76</td> <td>80</td> <td>79</td> <td>78</td> <td>80</td> </tr> </tbody> </table>	English	67	73	101	68	66	86	69	86	101	64	Maths	77	78	76	76	78	76	80	79	78	80
English	67	73	101	68	66	86	69	86	101	64													
Maths	77	78	76	76	78	76	80	79	78	80													
7. Work out $4^3/5 \times 6/7$	8. Find the value of x when $a = 3$ and $b = 6$ $x = b^2 + 4$																						
9. To determine the number of deer in a forest, a forest ranger tags 280 and releases them back into the forest. Later, 405 deer are caught, out of which 45 of them are tagged. Estimate how many deer are in the forest.	10. Reflect the shape in the line $x = -y$ 																						
11. Draw a line of best fit on the following scatter graph and estimate the weight when the height is 150cm. 	12. Using the tree diagram below, calculate the probability of throwing three heads in a row on a fair coin. 																						
13. Simplify the following: $a^3 \times a^5 \times a^{-2}$	14. Represent $x \geq -10$ on the number line 																						
15. What is the volume of the cylinder below? 	16. Calculate the mean number of cousins of students in a class. <table border="1"> <thead> <tr> <th>Number of cousins</th> <th>Frequency</th> <th></th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td></td> </tr> <tr> <td>4</td> <td>4</td> <td></td> </tr> <tr> <td>6</td> <td>8</td> <td></td> </tr> <tr> <td>6</td> <td>6</td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> </tr> </tbody> </table>	Number of cousins	Frequency		3	2		4	4		6	8		6	6		Total						
Number of cousins	Frequency																						
3	2																						
4	4																						
6	8																						
6	6																						
Total																							
17. If we are told that a piece of wood is 12cm long to the nearest cm, then what is the range of possible lengths it could be?	18. Expand and Simplify $(x - 2)(x + 4)$																						
19. Calculate the length of the side labelled d .	20. Calculate the angle for people's favourite chocolates.																						

Complete the quotation drill before answering the quick question using the line you have analysed in the grid.
‘there sat a jolly Giant, glorious to see, who bore a glowing torch... to shed its light on Scrooge.’

<p>What does the quotation mean? What does the quotation suggest?</p>	<p>Pick ONE word that shifts the tone of the novella from melancholy to something else. Explain your decision.</p>	<p>Why is this ghost 'glorious to see'? What can we infer about this ghost compared to the two that have come before?</p>	<p>What is the significance of light in the novel? Why is it important that its light is 'shed... on Scrooge'?</p>	<p>Now write a paragraph which answers this question. In your response, use the quotation you have just analysed: <u>How does Dickens present ideas about Christmas through the Ghosts?</u></p>
<p>What is the authorial intent? What does the author say about what is going on through this quotation?</p>	<p>How can you connect this quotation to other areas of the text? Consider ideas from all staves.</p>	<p>What similarities does this ghost share with Christmas time? Consider each part of the quotation carefully.</p>		
<p>How does this quotation be filed under? One has already been done for you:</p>				