

Year 10 Higher Maths Practice Paper 3

This paper covers: Percentages, Work with fractions, Non-calculator methods, Algebraic manipulation, Quadratic expressions and equations, Straight line graphs, Graphs and diagrams, Probability, Ratio and scale, Perimeter, area and volume, Pythagoras and trigonometry.

TIME ALLOWED

45 minutes

TOTAL MARKS

35

QUESTIONS

26

Name _____

Class _____ Date _____

INSTRUCTIONS

- Use black ink or a black ball-point pen.
- Answer every question in the space given.
- You may use a calculator.
- Show your working. Some marks are given for a correct method, even when the answer is wrong.

INFORMATION

- The marks for each question are shown in brackets, for example [1 mark].
- The questions start easier and get harder as you go.
- Diagrams are not drawn accurately unless the question says so.
- Check your answers if you have time at the end.

FOR THE MARKER

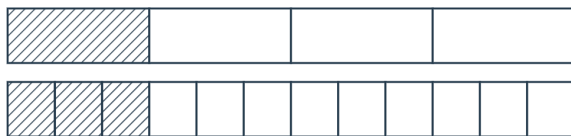
Score _____ out of 35

Percentage _____ %

01 Questions

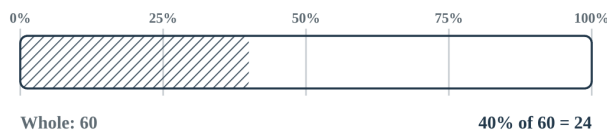
Answer every question. Show your working.

- 1** The top bar shows $\frac{1}{4}$. Each part of the bottom bar is a twelfth. How many twelfths is $\frac{1}{4}$? [1 mark]



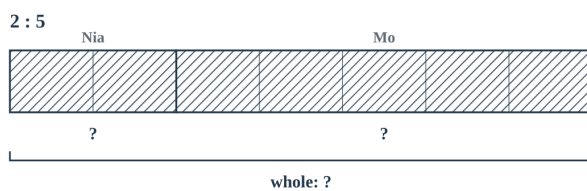
ANSWER

- 2** The bar stands for £60, the price before a sale. The filled part is the 40% taken off. What is the sale price? [1 mark]



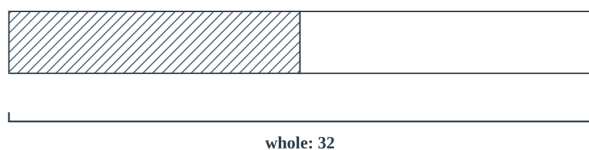
ANSWER

- 3** Nia and Mo share 21 shells in the ratio 2 : 5. The bar shows the shares. How many equal parts is it cut into? [1 mark]



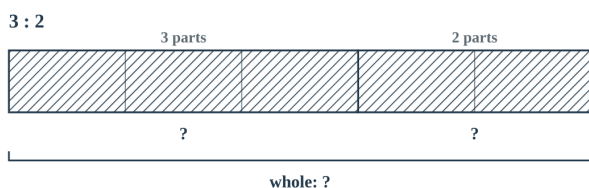
ANSWER

- 4 The bar shows 32 split into 2 equal shares, with $\frac{1}{2}$ shaded. What is the shaded part worth? [1 mark]



ANSWER

- 5 The bar is cut in the ratio 3 : 2. Out of how many equal parts is the first share taken? [1 mark]



ANSWER

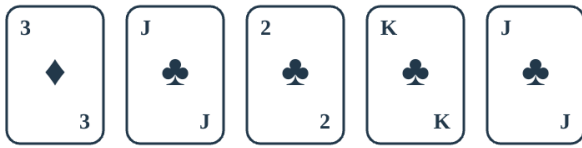
- 6 37% of a number is 88.8. What is the number? [1 mark]

ANSWER

- 7 The table for $y = -x - 1$ has x values -2, -1, 0, 1, 2 and y values 1, 0, -1, -2, ?. What is the missing y value? [1 mark]

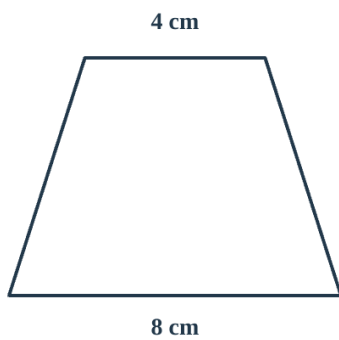
ANSWER

- 8 One of these 5 cards is picked without looking. What is the probability it is a club? [1 mark]
Give a fraction in its simplest form. Write your answer as a fraction.



ANSWER

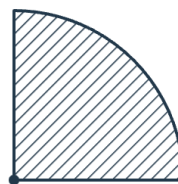
- 9 This trapezium has an area of 36 square centimetres and its parallel sides add up to 12 centimetres. What is its perpendicular height in centimetres? [1 mark]



perpendicular height ? cm

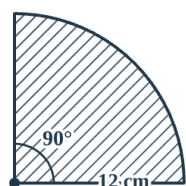
ANSWER

- 10 Set the slice so that it is a quarter of the circle. Draw the angle with a ruler and protractor. [1 mark]



11 Work out the area of the sector. Give your answer to one decimal place.

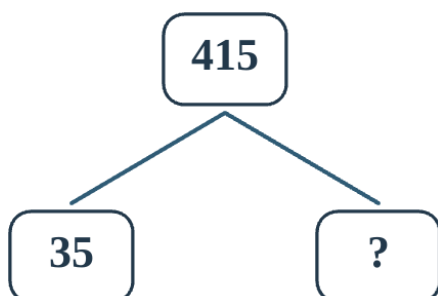
[2 marks]



ANSWER

12 One part of the whole is missing. What is it?

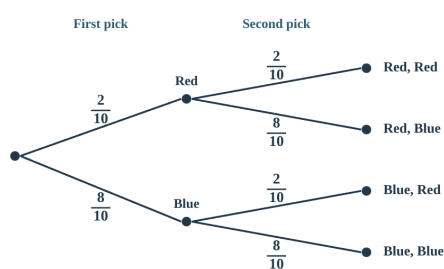
[1 mark]



ANSWER

13 The tree shows two picks of a counter, the first put back before the second. How many different paths, from start to finish, does the tree show?

[2 marks]



ANSWER

14 Zak simplifies $3x + 3$ to $6x$. What is wrong? Circle your answer.

[1 mark]

- ☐ It should be 6
- ☐ $3x$ and 3 are not like terms, so it stays as $3x + 3$
- ☐ Nothing, $6x$ is right

- 15 Omar writes $\frac{4}{9} \times \frac{1}{6} = \frac{24}{9}$. Which step is wrong? Circle your answer. [1 mark]
- ☐ Nothing, the working is right
- ☐ The second fraction has been turned over, which belongs to division
- ☐ The tops should have been added

- 16 Finn fences a rectangular plot 7 metres by 11 metres. Fencing costs £6 a metre. What is the total cost in pounds? [2 marks]

ANSWER

- 17 A recipe uses 40 g of butter to 300 g of flour. Write the ratio of butter to flour in its simplest form. Circle your answer. [1 mark]
- ☐ 2 : 15 ☐ 2 : 17 ☐ 15 : 2

- 18 A spinner has three colours. Which list could be the probabilities of all three? Circle your answer. [1 mark]
- ☐ 0.25, 0.25, 0.25 ☐ 0.3, 0.3, 0.3 ☐ 0.35, 0.45, 0.2

- 19 Factorise $2x^2 + 7x + 3$. [2 marks]

ANSWER

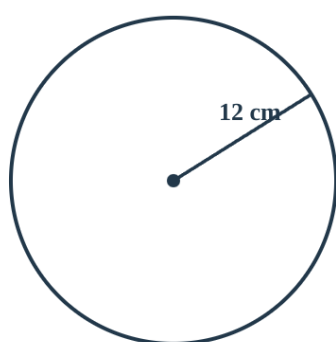
- 20 Leah casts a triangular prism in metal. It is 9 centimetres long and has a right-angled triangular cross-section with shorter sides of 9 centimetres and 12 centimetres. One cubic centimetre of the metal has a mass of 8 grams. What is the mass of the casting, to the nearest gram? [2 marks]

ANSWER

- 21 A club had 250 members last year and has 125 this year. By what percentage has its membership fallen? [2 marks]

ANSWER

- 22 A semicircle is cut from this circle along its diameter. What is the area of the semicircle, to one decimal place? [2 marks]



ANSWER

- 23 A dice and a dice are rolled and added. Which total is most likely? Circle your answer. [1 mark]
- ☐ 10 ☐ 7 ☐ 9

First dice	Second dice					
	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

- 24 Where would brackets change nothing about the value of $2 + 5 \times 6$? Circle your answer. [1 mark]
- ☐ $(2 + 5) \times 6$ ☐ $2 \times (5 + 6)$ ☐ $2 + (5 \times 6)$

25 If one factor of a multiplication is divided by 10, what happens to the answer? Circle your answer. [1 mark]

- ☐ The answer is divided by 10 as well
- ☐ The answer does not change
- ☐ The answer is multiplied by 10

26 Two dice are rolled and the scores are added. How many of the outcomes give a total greater than 8? [3 marks]

ANSWER

Practice Paper 3

FOR THE MARKER

The marks for every question, the answers to accept and what to award for part of an answer. 35 marks in total.

1	3	[1 mark]
2	£36	[1 mark]
3	7	[1 mark]
4	16	[1 mark]
5	5	[1 mark]
6	240	[1 mark]
7	-3	[1 mark]
8	$\frac{4}{5}$	[1 mark]
9	6 cm	[1 mark]
10	90° <i>Award the mark when the drawing or marking matches the answer shown.</i>	[1 mark]
11	113.1 cm ² <i>Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.</i>	[2 marks]
12	380	[1 mark]
13	4 <i>Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.</i>	[2 marks]
14	3x and 3 are not like terms, so it stays as 3x + 3 <i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	[1 mark]
15	The second fraction has been turned over, which belongs to division <i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	[1 mark]

16	216	[2 marks]
	<i>Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.</i>	
17	2 : 15	[1 mark]
	<i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	
18	0.35, 0.45, 0.2	[1 mark]
	<i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	
19	$(2x + 1)(x + 3)$	[2 marks]
	<i>Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.</i>	
20	3888 g	[2 marks]
	<i>Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.</i>	
21	50 %	[2 marks]
	<i>Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.</i>	
22	226.2 cm ²	[2 marks]
	<i>Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.</i>	
23	7	[1 mark]
	<i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	
24	2 + (5 × 6)	[1 mark]
	<i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	
25	The answer is divided by 10 as well	[1 mark]
	<i>Award the mark for the correct choice only. Two or more choices marked scores no mark.</i>	
26	10	[3 marks]
	<i>Award 3 marks for the correct answer. Award 2 marks for a complete method with no more than one arithmetic error. Award 1 mark for a correct first step.</i>	

Total

35 marks