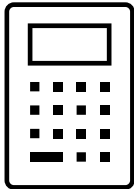


Surname:

Forename(s):

GCSE Mathematics – Foundation Tier

Paper 3 – Calculator



Practice Set B

ANSWERS



Materials

- **Formulae Sheet** (on the next page)
- **Black** ink or ball-point pen
- Pencil
- Eraser
- Protractor
- Compass
- Tracing Paper
- **Calculator allowed**

/40

Instructions

- Time allowed: **45 minutes**.
- The total mark for this paper is **40**.
- Show **all** of your working.
- Draw diagrams in pencil.
- Plot graphs in pencil.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- Cross through any work you don't want to be marked

Foundation Tier Formulae Sheet

Perimeter, Area and Volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium = $\frac{1}{2}(a + b)h$

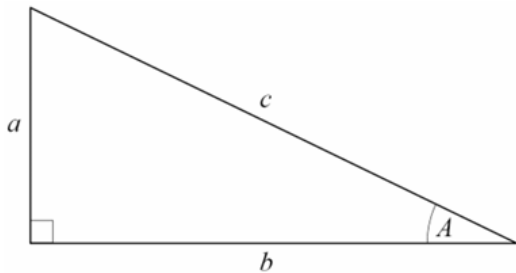
Volume of a prism = area of cross section $\times$ length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a , b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle ABC where a , b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

$$\text{Total accrued} = P \left(1 + \frac{r}{100} \right)^n$$

Probability

Where $P(A)$ is the probability of outcome A

and $P(B)$ is the probability of outcome B :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B) P(B)$$

- 1 Write $\frac{3}{10}$ as a percentage

$$\frac{3}{10} \xrightarrow{\times 10} \frac{30}{100}$$

30 %

(Total for question 1 is 1 mark)

- 2 Write these numbers in order of size.
Start with the smallest number.

$\textcircled{4}$ 0.306 $\textcircled{1}$ 0.03 $\textcircled{5}$ 0.36 $\textcircled{2}$ 0.063 $\textcircled{3}$ 0.3

0.306 $\textcircled{4}$
 0.030 $\textcircled{1}$
 0.360 $\textcircled{5}$
 0.063 $\textcircled{2}$
 0.300 $\textcircled{3}$

0.03, 0.063, 0.3, 0.306, 0.36

(Total for question 2 is 1 mark)

- 3 Work out the midpoint of 147 and 471

$$\frac{147 + 471}{2} = \frac{618}{2}$$

309

(Total for question 3 is 1 marks)

- 4 24 people were asked what their favourite music style is.
Here are the results:

Music Style	Frequency
Rap	7
Country	5
Pop	8
Rock	4

(a) One person is chosen at random.

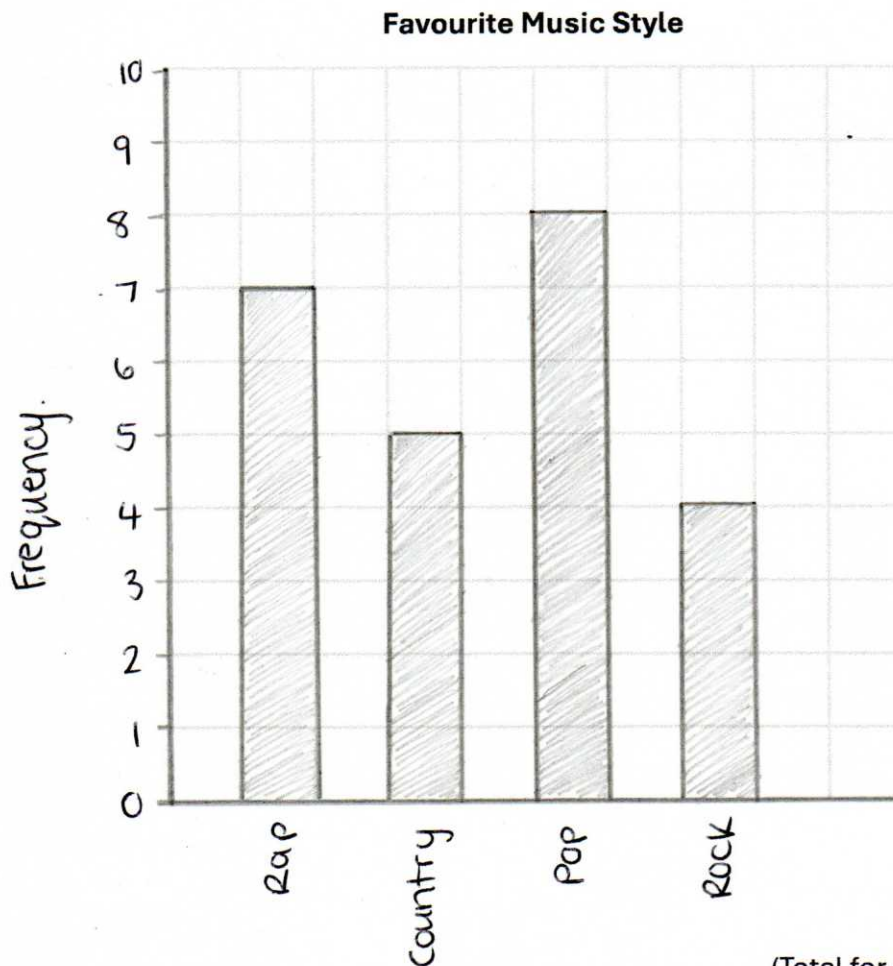
What is the probability that their favourite music style is rap or rock?

$$\frac{7 + 4}{24} = \frac{11}{24}$$

$$\frac{11}{24}$$

(1)

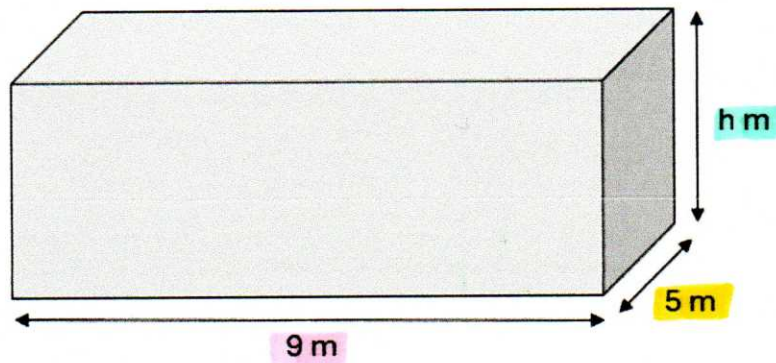
(b) On the grid below, draw a bar chart to represent the information in the table.



(3)

(Total for question 4 is 4 marks)

- 5 The volume of this cuboid is 270 m^3 .
Workout the height of the cuboid.



$$\text{Volume} = \text{base} \times \text{width} \times \text{height}$$

$$270 = 9 \times 5 \times h$$

$$270 = 45h$$

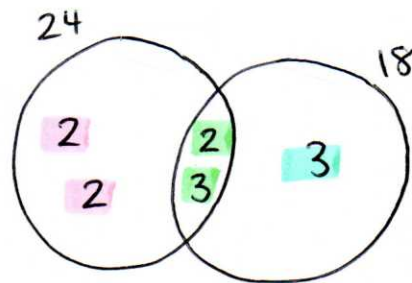
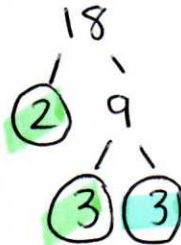
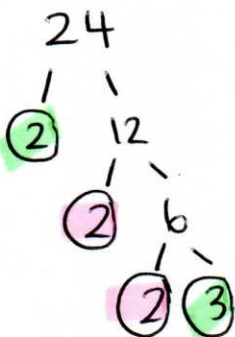
$$\div 45 \quad \div 45$$

$$6 = h$$

$$\underline{\quad 6 \quad} \text{ m}$$

(Total for question 5 is 3 marks)

- 6 Work out the highest common factor of 24 and 18

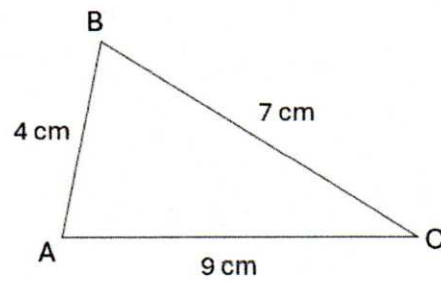


$$2 \times 3 = 6$$

$$\underline{\quad 6 \quad}$$

(Total for question 6 is 2 marks)

7 ABC is a triangle.

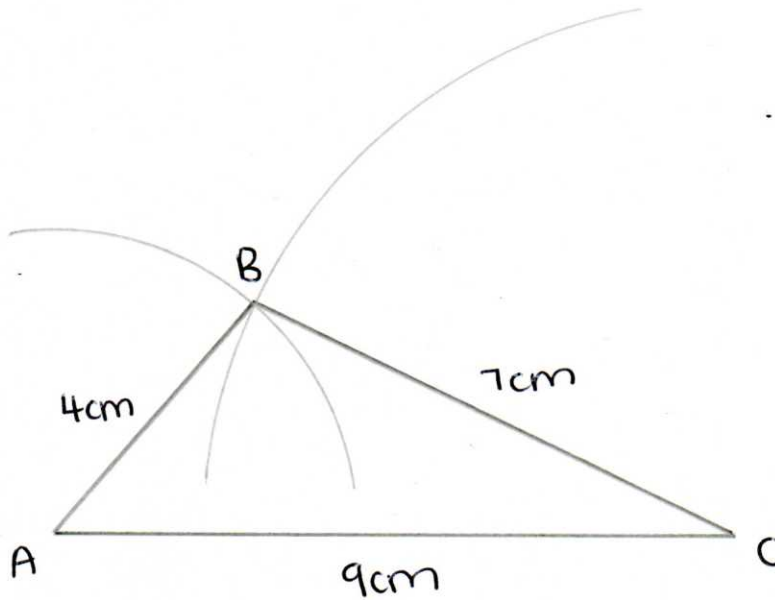


$AB = 4 \text{ cm}$

$BC = 7 \text{ cm}$

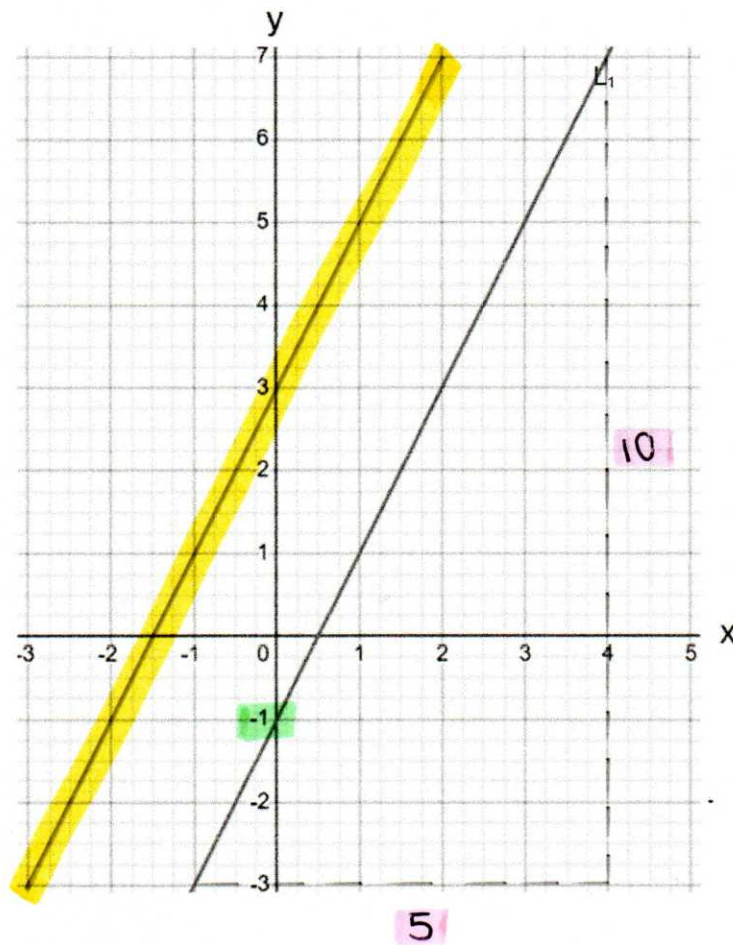
$AC = 9 \text{ cm}$

Use a ruler and compass to construct an accurate drawing of triangle ABC
You must show all of your construction lines.



(Total for question 7 is 3 marks)

8 Here is the graph of a straight line L_1



(a) Write down an equation for the line L_1 .

$$y = mx + c$$

$\uparrow$ gradient $\uparrow$ y intercept

$$m = \frac{10}{5} = 2$$

$$c = -1$$

$$\underline{y = 2x - 1}$$

(3)

(b) On the graph, draw a **another straight line which is parallel to L_1 .**

$\uparrow$
 (any line with the same gradient)

(1)

(Total for question 8 is 4 marks)

9 Riley, Sara and Tamin share some money.

Riley gets 34% of the money.

Sara gets $\frac{2}{5}$ of the money.

Tamin gets the rest of the money.

Sara gets £140.

(a) Work out the difference between the amount of money Riley receives and the amount of money Tamin receives

$$\begin{array}{l}
 \frac{2}{5} = 140 \\
 \div 2 \swarrow \quad \searrow \div 2 \\
 \frac{1}{5} = 70 \\
 \times 5 \swarrow \quad \searrow \times 5 \\
 \frac{5}{5} = 350 \\
 \text{Total} = \pounds 350
 \end{array}$$

$34\% \text{ of } \pounds 350$
 $\frac{34}{100} \times 350 = \pounds 119$
 $350 - 119 - 140 = 91$
 Riley = $\pounds 119$
 Sara = $\pounds 140$
 Tamin = $\pounds 91$
 $119 - 91 = 28$

£ 28

(4)

(b) Sara spends her £140 on a large box of scented candles.

In the box, there are 80 scented candles.

She sells all of the candles for £4.99 each.

Work out her profit that she has made.

$$\begin{array}{l}
 80 \times 4.99 = \pounds 399.20 \\
 399.20 - 140 = \pounds 259.20
 \end{array}$$

£ 259.20

(2)

(Total for question 9 is 6 marks)

10 (a) Expand and simplify $4(2w - 5) + 6(w + 3)$

$$4(2w - 5) + 6(w + 3)$$

$$8w - 20 + 6w + 18$$

$$14w - 2$$

$$\underline{14w - 2}$$

(2)

(b) Factorise fully $6f - 8f^2$

$$6f - 8f^2$$

$$2f(3 - 4f)$$

$$\underline{2f(3 - 4f)}$$

(2)

(c) make h the subject of the formula $g = 7h - 5$

$$\begin{array}{ccc} g = 7h - 5 \\ (+5) & & (+5) \end{array}$$

$$\begin{array}{ccc} g + 5 = 7h \\ (\div 7) & & (\div 7) \end{array}$$

$$\frac{g+5}{7} = h$$

$$\underline{h = \frac{g+5}{7}}$$

(2)

(Total for question 10 is 6 marks)

11 Here are the densities of some different metals to 2 decimal places.

Density

Iron = 7.87 g/cm^3

Copper = 8.96 g/cm^3

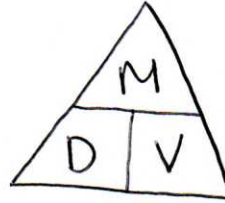
Steel = 10.49 g/cm^3

A solid trophy has a volume of 313 cm^3

The trophy has a mass of 2.8 kg

Which metal is trophy made out of.

You must show how you get your answer.



$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

$$2.8 \text{ kg} = 2800 \text{ g}$$

↖
x1000

$$\text{Density} = \frac{2800}{313} = 8.945686...$$

Copper

(Total for question 11 is 3 marks)

12 $a = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$ $b = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$

Write down the column vector for $2a - 5b$

$$2 \begin{pmatrix} 4 \\ -1 \end{pmatrix} - 5 \begin{pmatrix} 2 \\ -3 \end{pmatrix}$$

$$\begin{pmatrix} 8 \\ -2 \end{pmatrix} - \begin{pmatrix} 10 \\ -15 \end{pmatrix}$$

$$\begin{pmatrix} -2 \\ 13 \end{pmatrix}$$

(Total for question 12 is 2 marks)

END OF TEST

TOTAL FOR THIS PAPER IS 40 MARKS