GCSE Mathematics - Paper 3 (Foundation tier)

J560/03 Paper 3 Mathematics (Foundation Tier)

Question Set 4

1 Work out.

$1.52\,\text{kg} + 80\,\text{g}$

Give your answer in kilograms.

$80\,g = 0.08\,kg$

$1.52 + 0.08 = 1.60$

1.60 kg [2]

2 (a) Round 32629 to the nearest thousand.

(a) 33000 [1]

(b) Round 32629 to 1 significant figure.

(b) 30000 [1]

3 A circle has radius 5 cm.

(a) Work out the circumference of the circle.

$\pi D = 2\pi r$

$2 \times \pi \times 5 = 10\pi\,cm$

(a) 10π cm [2]

(b) Work out the area of the circle.

πr^2

$\pi \times (5)^2 = 25\pi\,cm^2$

(b) 25π cm^2 [2]

4 Dan thinks of a number.
He adds 3 and divides the result by 2.
His answer is 16.

What number is Dan thinking of?

Dan thinks of x.

$\frac{x+3}{2} = 16 \rightarrow 32 = x+3 \rightarrow 29 = x$

29 ..... [2]

5 Jenny has a five-sided **biased** spinner.
The sectors are coloured red, blue, green, yellow and white.
She spins the spinner 100 times.

The table shows the number of times the spinner lands on each colour.

Colour	Frequency
Red	28
Blue	38
Green	6
Yellow	0
White	28
Total	100

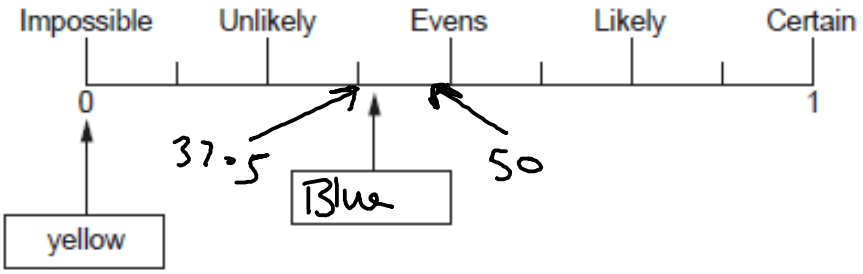
Jenny uses her data to estimate the probability of the spinner landing on each colour.

(a) Write down Jenny's estimate for the probability of landing on red.

$\frac{28}{100} = \frac{7}{25}$

(a) 7/25 **[1]**

(b) Jenny then writes in some of the colours on this probability scale.



(i) Write the correct colour in the box. → $37.5 < x < 50$, x = Blue **[1]**

(ii) Explain why Jenny's estimate for the probability of landing on yellow cannot be the actual probability.

Because there is still a yellow side on the spinner. This means there is a chance it can land on yellow. So can't be 0. **[1]**

6 Nada is planning the colour scheme for her bedroom.

The colour of her carpet can be blue (B), grey (G) or red (R).
The walls can be painted yellow (Y), white (W) or pink (P).

(a) Complete the table to show all of the possible colour combinations she can make.
You may not need all the rows.

Carpet	Walls
B	Y
B	W
B	P
G	Y
G	W
G	P
R	Y
R	W
R	P

[2]

(b) Explain why it would **not** be mathematically correct to find the probability that Nada decides on a grey carpet and pink walls using this formula.

$$\frac{1}{\text{the total number of colour combinations}}$$

We don't know if all the options are equally likely to be chosen. **[1]**

We would be assuming all colour combinations have the same chance of being chosen.

7 (a) Find the value of

(i) $\sqrt[3]{216}$,

(a)(i) ..... 6 ..... [1]

(ii) 2^8.

(ii) ..... 256 ..... [1]

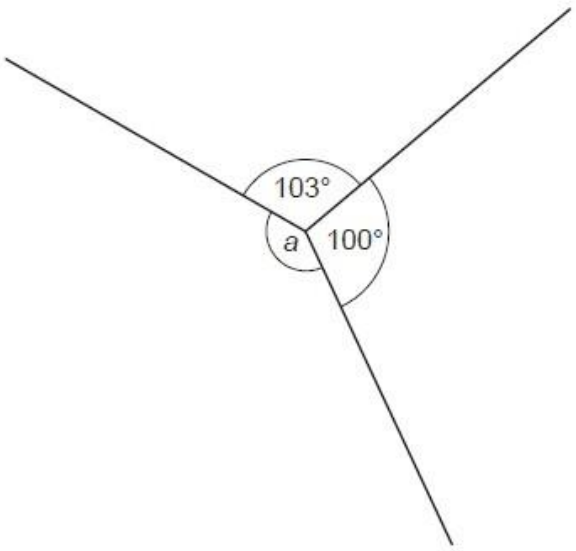
(b) The cube of 3 is added to the square root of 7.

Put a ring around the correct statement.

$\sqrt[3]{3}+7^2$ 3^3+7^2 $3^3+\sqrt{7}$ $\sqrt[3]{3}+\sqrt{7}$

[1]

8 (a) Three lines meet at a point.



Not to scale

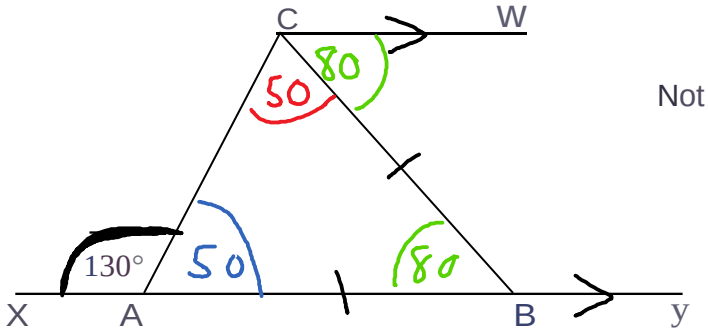
Work out the size of angle *a*.

$360 - (100+103) = 157° = a$

(a) $a =$ 157 ° [2]

8b)

XY and CW are parallel lines.
AB = CB.
Angle CAX = 130°.



Not to scale

(i) Complete this sentence.

Angle CAB = 50° because angles on a straight line add up to 180° → 180 − 130 = 50° [1]

(ii) Work out angle BCW.
Give a reason for each angle you work out.

The triangle is an isosceles so angle CAB = BAC = 50°

Angle CBA = 180 − (50 + 50) = 80° as angles in triangle add to 180°.

Angle BCW = CBA as alternate angles are equal.

So BCW = 80°

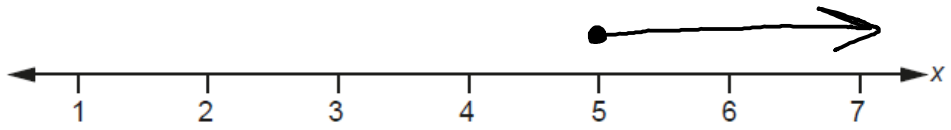
(b)(ii) 80° [4]

9 Solve $3x - 5 \geqslant 10$.
Show your solution on the number line.

$3x - 5 \geqslant 10$

$3x \geqslant 15$

$x \geqslant 5$



[4]

10 Amrit's income is 32% more than Bethan's income.
Amrit and Bethan's combined income is £54 868.

Calculate Amrit's income.

Bethan $= x$

Amrit $= 1.32x$

$x + 1.32x = 54868$

$2.32x = 54868$

$x = \frac{54868}{2.32} = 23650$

Bethan $= £23650$

Amrit $= 1.32 \times 23650 = £31218$

£ 31218 **[5]**

11 Jacob, Amelie and Reuben each roll a fair six-sided dice.
What is the probability that all three roll a number less than 3?

Give your answer as a fraction in its simplest form.

less than 3 is 2 and 1 $= 2/6 = 1/3$ chance

$1/3 \times 1/3 \times 1/3 = 1/9$

1/9 ..... [3]

12 Kay invests £1500 in an account paying 3% **compound** interest per year.
Neil invests £1500 in an account paying r% **simple** interest per year.

At the end of the 5th year, Kay and Neil's accounts both contain the same amount of money.

Calculate r.
Give your answer correct to 1 decimal place.

Kay → $1500 \times (1.03)^5 = 1738.911111$

Neil → $1738.911111 = 1500 + 5r$

$1238.911111 = 5r$

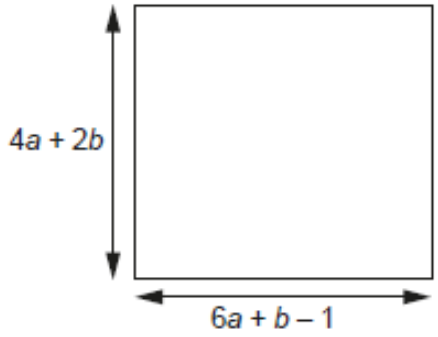
$r = £247.78222222$

$= 247.80$

$r =$ £247.80 **[6]**

13 In this question, all lengths are in centimetres.

Here is a square.



Not to scale

Find the length of one side of the square when $b = 4$.

$4a + 2(4) = 4a + 8$

$6a + (4) - 1 = 6a + 3$

$6a + 3 = 4a + 8$

$2a = 5$

$a = 5/2$

$4a + 2b$

$4(5/2) + 2(4) = 18$

18 cm **[6]**

Total Marks for Question Set 4: 50