Level 6 Practice 8

Q1. Rainfall

The table shows information about the rainfall in two places in South America.

Place	Season	Mean rainfall	Number of months	Months
A	Dry	10 cm per month	8	Jan to Aug
	Wet	20 cm per month	4	Sept to Dec
B	Dry	5 cm per month	10	July to Apr
	Wet	50 cm per month	2	May to June

Which of the places has **more rainfall** on average over the whole year?

Show working to explain your answer.

Tick (✓) your answer.

☐ A ☐ B

2 marks

Q2. Recycling

In one year, **2 million tonnes** of glass bottles and jars were thrown away in the UK.

38% of these bottles and jars were recycled.

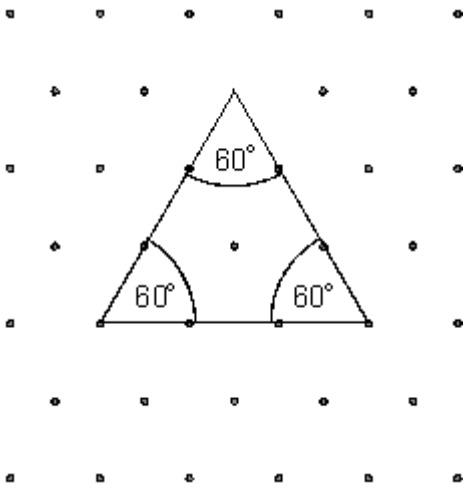
How many tonnes of the bottles and jars were recycled?

..... tonnes

2 marks

Q3. Shapes on a grid

(a) Look at the equilateral triangle.



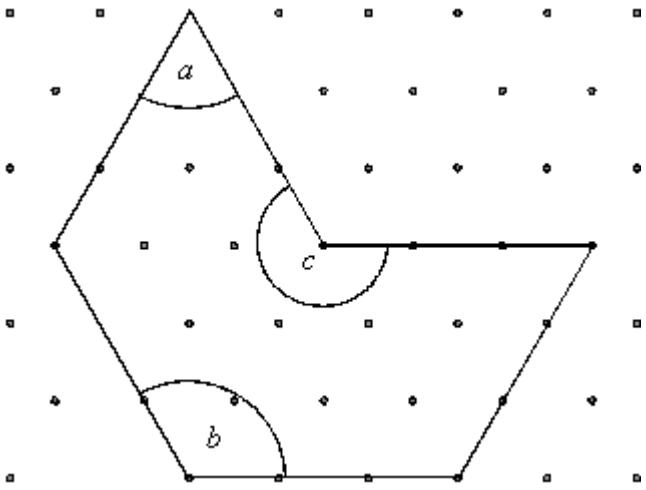
Isometric grid

Each angle in an equilateral triangle is 60°

Explain why.

1 mark

(b) Now look at this shape.



Isometric grid

Work out the sizes of angles a, b and c

a = ...° b = ...° c = ...°

2 marks

Q4. Value of x

(a) Look at the equation.

$5x + 1 = 2x - 8$

Complete the sentence below by ticking (✓) the correct box.

The value of x is …

- ☐ … one particular number.
- ☐ … any number less than zero.
- ☐ … any number greater than zero.
- ☐ … any whole number.
- ☐ … any number at all.

1 mark

(b) Now look at this equation.

$y = 3x - 2$

Complete the sentence below by ticking (✓) the correct box.

The value of x is …

- ☐ … one particular number.
- ☐ … any number less than zero.
- ☐ … any number greater than zero.
- ☐ … any whole number.
- ☐ … any number at all.

1 mark

Q5. Darts

Gita threw three darts.

Use the information in the box to work out what numbers she threw.

The lowest number was 10

The range was 10

The mean was 15

Gita's numbers were ..... , ... and .....

1 mark

Q6. Yoghurt

A dessert has both fruit and yoghurt inside.

Altogether, the mass of the fruit and yoghurt is **175g**.

The **ratio** of the mass of **fruit** to the mass of **yoghurt** is **2 : 5**

What is the mass of the yoghurt?

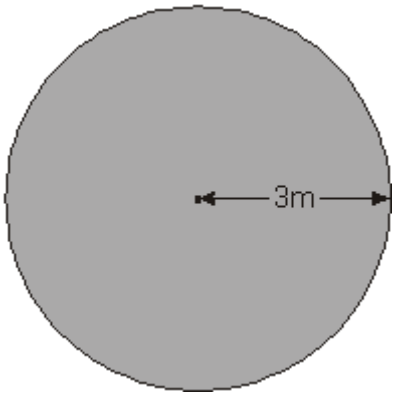
..... g

2 marks

Q7. Lawn

The diagram shows a plan of Luke's new lawn.

The lawn is a circle with radius 3m.



Work out the area of the lawn.

..... m^2

2 marks

Q8. Brackets

Jenny wants to multiply out the brackets in the expression $3(2a + 1)$

She writes:

$3(2a + 1) = 6a + 1$

Show why Jenny is **wrong**.

1 mark

M1. Indicates place A
and
gives a correct justification
eg
- 10 × 8 + 20 × 4 = 160cm
  5 × 10 + 50 × 2 = 150cm
- (80 + 80) ÷ 12 = 13.(…)cm per month
  (50 + 100) ÷ 12 = 12.5cm per month
- (80 + 80) ÷ 2 = 80cm per 6 months
  (50 + 100) ÷ 2 = 75cm per 6 months

Accept for 2m, minimally acceptable justification
eg
- *160, 150 seen*
- *80, 80 and 50, 100 seen*
- *10 × 8 + 20 × 4 > 5 × 10 + 50 × 2*
- *13.(…), 12.5 seen*

2

or Gives a correct justification, even if the decision is incorrect or omitted

or

Shows a complete correct method with not more than one computational error, and follows through to make their correct decision
eg
- 10 × 8 + 20 × 4 = 120 *(error)*
  5 × 10 + 50 × 2 = 150, so place B

1

(U1)

[2]

M2. 760 000

2

or Shows the value 1 240 000

or

Shows a complete correct method with not more than one error
eg
- 2 000 000 × 0.38
- 38 ÷ 100 × 2 × 1 000 000
- 2 million = 20 000 000 *(error)*
  20 000 000 × 0.38 = 7 600 000

1

[2]

M3. (a) Gives a correct explanation

The most common correct explanations:

Refer to the sum of the angles in a triangle
eg
- The angles are equal and add up to 180, so 180 ÷ 3 = 60

- Angles in a triangle add up to 180, the three angles are equal so 60 + 60 + 60 = 180

Accept minimally acceptable explanation

eg

- *180 ÷ 3*
- *60 × 3 = 180*
- *The angles are the same and add up to 180*

Do not accept incomplete explanation

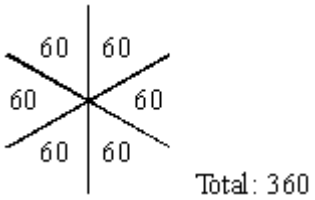
eg

- *The three angles add up to 180*
- *Angles in a triangle add up to 180*
- *The three angles are equal*
- *60 × 3*
- *It's an equilateral triangle*

Refer to the sum of angles at a point

eg

- You can see that six of the triangles fit together at a point, so 360 ÷ 6 = 60
-



Accept minimally acceptable explanation

eg

- *360 ÷ 6*
- *60 × 6 = 360*

Do not accept incomplete explanation

eg

- *Six of the angles add up to 360*
- *Angles at a point add up to 360*
- *60 × 6*

1

(b) Gives all three correct angles, ie
a = 60, *b* = 120 and *c* = 240

2

or Gives two correct angles

! ***For 1, follow-through***
Provided their b is obtuse, accept c as 2 × their b or 360 – their b

1

(U1)

[3]

M4. (a) Indicates … one particular number, ie

☑

☐

☐

☐

☐

U1

(b) Indicates … any number at all, ie

☐

☐

☐

☐

☑

U1

[2]

M5. Gives all three correct numbers, ie

10, 15 and 20 [any order]

[1]

M6. 125

2

or Shows or implies recognition of the need to divide by 7
eg

- $\frac{5}{7}$ × 175
- 175 ÷ 7
- 25 seen

or

Shows the value 50 [mass of fruit]

1

[2]

M7. 28.(…) or 9π

2

or Shows or implies a complete correct method for finding the area of the lawn, with no evidence of conceptual error and not more than one computational or rounding error

eg

- Shows the digits 282(…) or 283
- 32 × π
- π = *3 (rounding error)*, 9 × 3 = 27

Do not accept for 1m, conceptual error

eg

- $3^2 \times \pi = 19$ *or* $18.8(\ldots)$ *or* 6π
- $\pi 3^2 = 89$
- *Area = 2 × 3 × π*

1

[2]

M8. Gives a correct explanation

The most common correct explanations:

Give the correct expansion of the expression

eg

- $3(2a + 1) = 6a + 3$, not $6a + 1$
- It should be 2 greater, ie $6a + 3$

Accept: minimally acceptable explanation

eg

- *6a + 3*
- *She needs to add 2*

Do not accept: incomplete or incorrect explanation

eg

- *3(2a + 1) ≠ 6a + 1*
- *3(2a + 1) = 6a + 2*
- *3(2a + 1) = 6a + 3*
  = 9a

Address the misconception

eg

- Both things in the brackets should be multiplied by 3, but she has forgotten the 1

Accept: minimally acceptable explanation

eg

- *3 × 1*
- *All bits need to be multiplied by 3*
- *You have to multiply everything in the*

brackets

- *She hasn't multiplied the 1*

Do not accept: incomplete explanation

eg

- *She hasn't multiplied out the brackets correctly*
- *The 1 is incorrect*

Give a correct counter example

eg

- When $a = 1$ then $3(2a + 1) = 9$, but $6a + 1 = 7$
- If a is 2, $3(2 \times 2 + 1) \neq 6 \times 2 + 1$

Accept: minimally acceptable explanation

eg

- *When a = 1 you get 9 and 7*

Do not accept: incomplete explanation

eg

- *When a = 1 you get different answers for each side, so it can't be right*

[1]