



# Mock Set 1 Paper 01 — Solutions

Foundation Tier — Total Marks: 80

Time allowed: 1 hour and 45 minutes

## Instructions

This document provides worked solutions to all questions from the mock paper. Use this for revision and checking your methods.

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## Solutions

### Question 1

Answer

6

Explanation

The range is the difference between the largest and smallest number.

Largest number: 8

Smallest number: 2

So,  $8 - 2 = 6$

### Question 2

Answer

64

Explanation

We subtract 68 from 132.

You can break it down like this:

$$132 - 60 = 72$$

$$72 - 8 = 64$$

So, the answer is 64

### Question 3

Answer

10b

Explanation

Multiply the numbers:  $2 \times 5 = 10$

So,  $2 \times b \times 5 = 10b$

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**Question 4****Answer**

45°

**Explanation**

Use a protractor to measure the angle.  
The angle measures 45°.

**Question 5****Answer**

50

**Explanation**

To find  $\frac{1}{4}$  of 200, divide 200 by 4:  
 $200 \div 4 = 50$

**Question 6****Answer**

2800

**Explanation**

Step 1: Convert litres to millilitres  
 $4 \text{ L} = 4000 \text{ ml}$ ,  $1.2 \text{ L} = 1200 \text{ ml}$   
Step 2: Subtract  
 $4000 - 1200 = 2800 \text{ ml}$   
Answer: 2800 ml

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### Question 7

#### Question 7(a)

Answer

18

Explanation

1 cm represents 6 m, so  
 $3 \times 6 = 18$  m

#### Question 7(b)

Answer

4.5

Explanation

1 cm represents 6 m, so  
 $27 \div 6 = 4.5$  cm

### Question 8

#### Question 8(a)

Answer

cinema: ||||| (7)  
zoo: ||||| (6)  
park: |||| (5)

Explanation

There are a total of 18 students.  
Count how many times each place appears:

- Cinema appears 7 times
- Zoo appears 6 times
- Park appears 5 times

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### Question 8(b)

Answer

cinema

Explanation

The mode is the value that occurs most often.

Cinema appears 7 times, which is more than zoo (6) or park (5).

Therefore, the mode is **cinema**.

### Question 9

#### Question 9(a)

Answer

$\frac{6}{20}$

Explanation

There are 6 green counters and 20 total counters.

So, the probability is  $\frac{6}{20}$ .

#### Question 9(b)

Answer

$\frac{14}{20}$

Explanation

James does not take a yellow counter, so he could take green or blue.

There are  $6 + 8 = 14$  counters.

So, the probability is  $\frac{14}{20}$ .

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**Question 9(c)****Answer**

0

**Explanation**

There are no red counters in the bag.  
So, the probability of taking a red counter is 0.

**Question 10****Answer**

Yes

**Explanation**

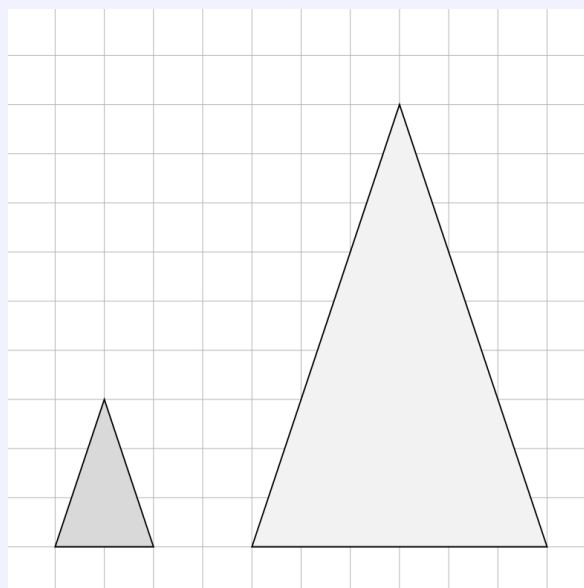
Step 1: Jack wants to make 24 muffins.  
To double the recipe, multiply each ingredient by 2.  
Required flour:  $300 \times 2 = 600$  g

Step 2: Jack has 750 g of flour.  
750 g is more than 600 g.

Conclusion: Yes, Jack has enough flour.

### Question 11

Answer



Explanation

**Enlargement by scale factor 3** from the origin:

- Take each vertex of the original triangle.
- Multiply both the  $x$ - and  $y$ -coordinates by 3.
- Plot the new points and join them to form the enlarged triangle.

Example: if a point is at  $(2, 1)$ , then  $(3 \times 2, 3 \times 1) = (6, 3)$ .

### Question 12

Question 12(a) (i)

Answer

22

Explanation

We are given  $A = 4x + 2y$ .

Substitute  $x = 4$  and  $y = 3$  :

$$A = 4(4) + 2(3)$$

$$= 16 + 6$$

$$= 22$$

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**Question 12(a) (ii)****Answer**

5.5

**Explanation**

We are given  $A = 4x + 2y$ ,  $A = 26$ ,  $y = 2$ .

Substitute into  $A = 4x + 2y$  :

$$26 = 4x + 2(2)$$

$$26 = 4x + 4$$

$$4x = 22$$

$$x = 5.5$$

**Question 12(b)****Answer**

5

**Explanation**

We are given  $B = 2t + 7$ ,  $t = -1$ .

Substitute:

$$B = 2(-1) + 7$$

$$= -2 + 7$$

$$= 5$$

**Question 13****Answer**

23p

**Explanation**

Chloe can make  $\frac{100}{5} = 20$  scrunchies with 100 g of wool.

The wool costs 300 p in total, so per scrunchie  $\frac{300}{20} = 15$  p.

Adding the hair band cost 8 p:

$$15 \text{ p} + 8 \text{ p} = 23 \text{ p}.$$



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**Question 14****Answer**

Plot points:  $(-2, -9)$ ,  $(-1, -5)$ ,  $(0, -1)$ ,  $(1, 3)$ ,  $(2, 7)$  and draw a straight line.

**Explanation**

EXPLANATION

**Question 15****Answer**

£375

**Explanation**

The deposit is 30% of £15,000, so  $0.3 \times 15,000 = £4,500$ .

Subtract the deposit:  $15,000 - 4,500 = £10,500$ .

Divide the remaining balance by 28 months:  $\frac{10,500}{28} = £375$  per month.

**Question 16****Answer**

Yes

**Explanation**

$75\% \text{ of } 80 = 0.75 \times 80 = 60$ .

Eva scored 64 marks, which is more than 60.

Therefore, she passes the exam.

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**Question 17****Answer** $11\frac{1}{2}$ **Explanation**

$$\begin{aligned}\frac{3}{4} \div \frac{1}{2} &= \frac{3}{4} \times \frac{2}{1} \\ &= \frac{6}{4} \\ &= 1\frac{1}{2}\end{aligned}$$

**Question 18****Answer**

15.36

**Explanation**

Ignore the decimals:  $32 \times 48 = 1536$ .

Each factor has 1 decimal place ( $1 + 1 = 2$ ).

Place 2 decimal places in the product:  $3.2 \times 4.8 = 15.36$ .

**Question 19****Question 19(a)(i)****Answer**

1

**Explanation**

Use the index law:  $a^m/a^m = a^{m-m} = a^0$ , and  $a^m/a^m = 1$  for  $a \neq 0$ .

Therefore,  $3^0 = 1$ .

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**Question 19(a)(ii)****Answer**

$$\frac{1}{9}$$

**Explanation**

$$3^{-2} = \frac{1}{3^2} = \frac{1}{9}$$

A negative power means reciprocal.

**Question 19(b)****Answer**

$$3^5$$

**Explanation**

Using index laws ( $a^m a^n = a^{m+n}$ ,  $a^p / a^q = a^{p-q}$ ):

$$\begin{aligned} \frac{3^4 \times 3^3}{3^2} &= 3^{4+3-2} \\ &= 3^5 \end{aligned}$$

**Question 20****Question 20(a)****Answer**

$$2^3 \times 11$$

**Explanation**

$$\begin{aligned} 88 &= 2 \times 44 \\ &= 2 \times 2 \times 22 \\ &= 2 \times 2 \times 2 \times 11 \\ &= 2^3 \times 11 \end{aligned}$$

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**Question 20(b)****Answer**

22

**Explanation**

$$88 = 2^3 \times 11$$

$$66 = 2 \times 3 \times 11$$

Common prime factors: 2 and 11

$$\text{So HCF} = 2 \times 11 = 22$$

**Question 21****Question 21(a)****Answer**

14

**Explanation**

$$5 \times 4.2 = 21 \text{ cm (total)}$$

$$21 - 7 = 14 \text{ cm (for 4 sticks)}$$

$$\frac{14}{4} = 3.5 \text{ cm}$$

**Question 21(b)****Answer***Mean is 2.5 cm higher***Explanation**Corrected stick is 17 cm, so total =  $21 - 7 + 17 = 31$ .

$$\text{New mean} = \frac{31}{5} = 6.2.$$

$$\text{Old mean was } 3.7 \Rightarrow 6.2 - 3.7 = 2.5.$$

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**Question 22****Answer**

See construction drawing

**Explanation**

Place the compass at point  $P$  and draw an arc cutting  $AB$  at two points  $X$  and  $Y$ .  
From  $X$  and  $Y$ , draw arcs of equal radius above the line so they intersect.  
Draw a straight line from  $P$  through the intersection; this is perpendicular to  $AB$  at  $P$  ( $90^\circ$ ).

**Question 23****Answer**

$60^\circ$

**Explanation**

Given  $x : y = 3 : 1$  on the straight line  $DBC$ ,  $3k + k = 180^\circ \Rightarrow x = 135^\circ$ ,  $y = 45^\circ$ .  
The interior angle at  $B$  of  $\triangle ABD$  is supplementary to  $x$ :  $\angle ABD = 180^\circ - x = 45^\circ$ .  
 $AB = AD \Rightarrow \angle ABD = \angle ADB = 45^\circ$ .  
 $w = \angle BAD = 180^\circ - 45^\circ - 45^\circ = 90^\circ$ .

**Question 24****Answer**

2400 g

**Explanation**

Let shelf A have  $x$  books. Then shelf B has  $3x + 1$  and shelf C has  $2x - 5$ .  
Form the equation:  $x + (3x + 1) + (2x - 5) = 44 \Rightarrow 6x - 4 = 44 \Rightarrow x = 8$ .  
Shelf A has 8 books; shelf B has  $3(8) + 1 = 25$ .  
Each book weighs  $7500 \div 25 = 300$  g.  
Total mass on shelf A =  $8 \times 300 = 2400$  g.

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**Question 25****Answer** $2.7 \text{ g/cm}^3$ **Explanation**

Use the formula  $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$ .

Given mass = 27 g and volume = 10 cm<sup>3</sup>,

Density =  $\frac{27}{10} = 2.7 \text{ g/cm}^3$ .

**Question 26****Answer**

160

**Explanation**

Round the numbers:  $5.7 \approx 6$ ,  $8.2 \approx 8$ ,  $0.26 \approx 0.3$ .

Estimate:  $\frac{6 \times 8}{0.3} = \frac{48}{0.3} = 160$ .

**Question 27****Question 27(a)****Answer** $6x^2 - 11x - 10$ **Explanation**

$$\begin{aligned}(3x + 2)(2x - 5) &= 3x \cdot 2x + 3x \cdot (-5) + 2 \cdot 2x + 2 \cdot (-5) \\ &= 6x^2 - 15x + 4x - 10 \\ &= 6x^2 - 11x - 10\end{aligned}$$

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**Question 27(b)****Answer**

$$(x - 4)(x + 4)$$

**Explanation**

Difference of two squares:  $a^2 - b^2 = (a - b)(a + b)$ .

$$\begin{aligned}x^2 - 16 &= x^2 - 4^2 \\&= (x - 4)(x + 4)\end{aligned}$$