

Sample Exam 1 – Solutions

Session 1

Total: 75 marks

SECTION I

1. State the value of the underlined digit in the number below. [1]

2 6 1 0 5

6 of thousands =  $6 \times 1\,000$

= 6 000

Answer \_\_\_\_\_ 6 000 \_\_\_\_\_

2. Insert the missing number in the box below. [1]

$$121 = \boxed{11}^2$$

3. Use the digits below to make the smallest number that is a multiple of 7. [1]

Smallest -  $358 \div 7 = 51 \text{ r } 1$

$385 \div 7 = 55$

Answer \_\_\_\_\_ 385 \_\_\_\_\_

4.  $\sqrt{64} - 5 = 9 - \square$

[1]

$$\begin{aligned}\sqrt{64} - 5 &= 8 - 5 \\ &= 3\end{aligned}$$

Now,  $9 - 6 = 3$ .

So,  $\square = 6$

Answer \_\_\_\_\_ 6 \_\_\_\_\_

5. Calculate  $324 \div 9$ .

[1]

$$\begin{array}{r} 36 \\ 9 \overline{) 324} \\ \underline{-27} \phantom{0} \\ 54 \\ \underline{-54} \\ 0 \end{array}$$

Answer \_\_\_\_\_ 36 \_\_\_\_\_

6. What is  $\frac{58}{3}$  as a mixed number?

[1]

$$\frac{58}{3} = 19\frac{1}{3}$$

Answer \_\_\_\_\_  $19\frac{1}{3}$  \_\_\_\_\_

7. Fill in  $>$ ,  $<$  or  $=$  into the box to make the statement correct.

[1]

$$(15 - 6) + 5 \quad \boxed{<} \quad (6 - 5) + 15$$

$$\begin{aligned} (15 - 6) + 5 &= 9 + 5 \\ &= 14 \end{aligned}$$

$$\begin{aligned} (6 - 5) + 15 &= 1 + 15 \\ &= 16 \end{aligned}$$

Now,  $14 < 16$ .

8. Arrange the numbers below in descending order.

[1]

8146      8614      8316      8164

All four numbers have their thousands digit as 8, so we cannot distinguish the largest by looking at the 8.

Looking at the hundreds digit in the order stated, we see, 1, 6, 3, 1. Of these, 6 is the largest, then 3. Hence, 8614 is the largest and 8316 is the second largest number.

We remain with 8146 and 8164 and observe that their tens digits are 4 and 6 respectively. Since 6 is larger than 4, 8164 is larger than 8146.

The numbers, in descending order, that is, largest number first will be,  
8614, 8316, 8164, 8146

Answer \_\_\_\_\_ 8614, 8316, 8164, 8146 \_\_\_\_\_

9. What is 30% of 150?

[1]

$$\begin{aligned} 30\% \text{ of } 150 &= \frac{30}{100} \times \frac{150}{1} \\ &= \frac{90}{2} \\ &= 45 \end{aligned}$$

Answer \_\_\_\_\_ 45 \_\_\_\_\_

10. On Tuesday, Jocelyn read 45 pages. She read three times as many pages on Wednesday than she read on Tuesday. How many more pages did Jocelyn read on Wednesday than on Tuesday? [1]

$$\text{Tuesday} = 45 \text{ pages}$$

$$\begin{aligned} \text{Wednesday} &= 45 \times 3 \\ &= 135 \end{aligned}$$

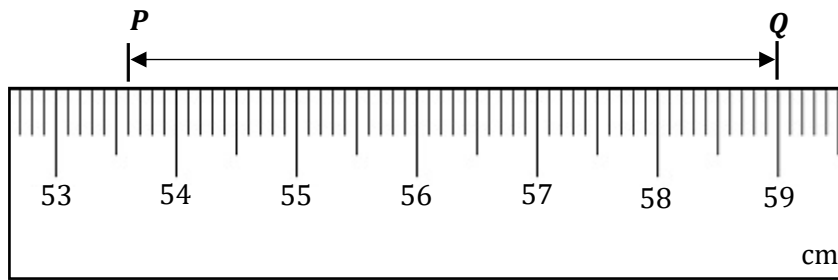
$$\text{Difference} = 135 - 45$$

$$\text{Difference} = 90 \text{ pages}$$

Answer \_\_\_\_\_ 90 \_\_\_\_\_ pages

11. What is the length, in cm, between points *P* and *Q*?

[1]



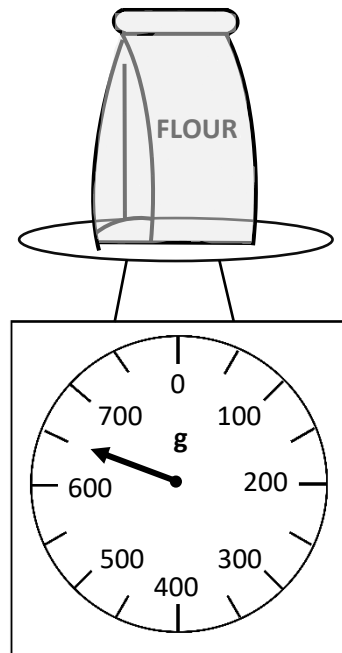
$$\begin{aligned} \text{The distance of } PQ &= 59.0 - 53.6 \text{ cm} \\ &= 5.4 \text{ cm} \end{aligned}$$

Answer \_\_\_\_\_ 5.4 \_\_\_\_\_ cm

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12. Lizzie uses the scale below to find the mass of a parcel of flour.

[1]



Write down the mass of the parcel of flour below.

Answer \_\_\_\_\_ **650** \_\_\_\_\_ g

13. Write down the MOST appropriate standard unit for recording the diameter of a bottle cap. [1]

Answer \_\_\_\_\_ **millimetre** \_\_\_\_\_

14. Felix, along with his family, will be on vacation from the 6<sup>th</sup> of August until the 27<sup>th</sup> of August. How many weeks will they be on vacation? [1]

$$\text{Number of days} = 27 - 6$$

$$= 21 \text{ days}$$

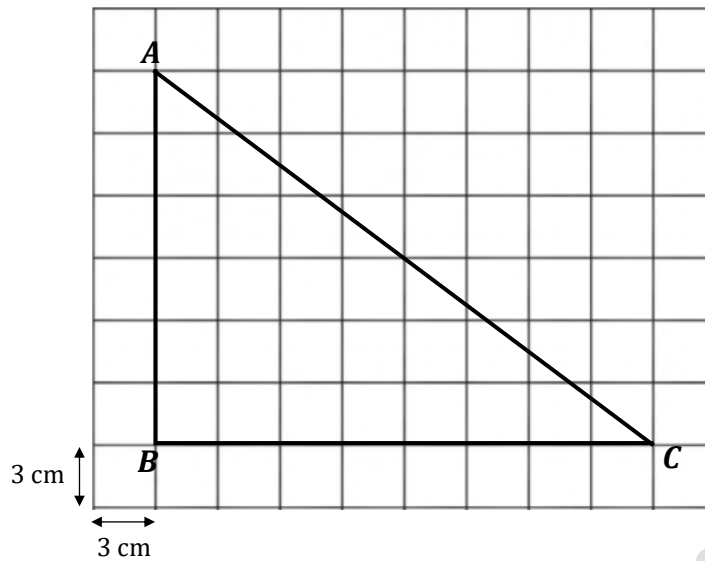
$$\text{Number of weeks} = 21 \div 7$$

$$= 3 \text{ weeks}$$

Answer \_\_\_\_\_ 3 \_\_\_\_\_ weeks

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15. In the diagram below, the length of each square is 3 cm. The perimeter of the shape is 72 cm.



Determine the length of the side AC.

[1]

The length of each square = 3 cm

The perimeter of the shape = 72 cm

Length of AB + Length of BC + Length of AC = 72 cm

$\therefore (6 \times 3) + (8 \times 3) + \text{Length of AC} = 72 \text{ cm}$

$18 + 24 + \text{Length of AC} = 72 \text{ cm}$

$42 + AC = 72$

$AC = 72 - 42$

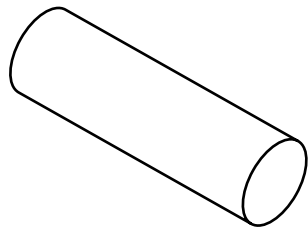
$AC = 30 \text{ cm}$

Answer \_\_\_\_\_ 30 \_\_\_\_\_ cm



16. Write down the name of the solid shown below.

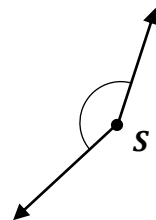
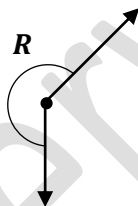
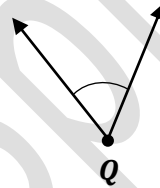
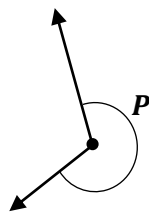
[1]



Answer \_\_\_\_\_ **cylinder** \_\_\_\_\_

17. Which of the angles below is obtuse?

[1]



**P is reflex.**

**Q is acute.**

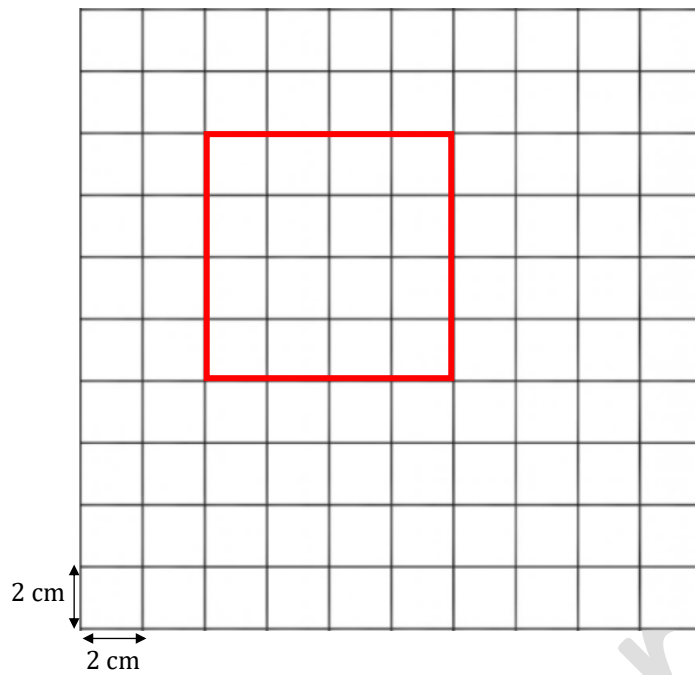
**R is reflex.**

**S is obtuse.**

Answer \_\_\_\_\_ **S** \_\_\_\_\_

18. Draw a square on the 2 cm grid below with an area of  $64 \text{ cm}^2$ .

[1]



$$\sqrt{64} = 8$$

$$8 \div 2 = 4 \text{ on each side}$$

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19. The mean of 29, 30 and 22 is the same as the mean of 33 and .

What number does  represent?

[1]

$$29 + 30 + 22 = 81$$

$$\text{Mean} = \frac{81}{3}$$

$$= 27$$

Therefore, the mean of 33 and  is 27.

$$\begin{aligned} \text{So, the total is } 33 + \text{} &= 27 \times 2 \\ &= 54 \end{aligned}$$

$$33 + \text{} = 54$$

$$\text{} = 54 - 33$$

$$\text{} = 21$$

Answer 21

20. The tally chart below shows the favourite fruit of a group of 45 people.

Fruit	Number of Students
Pomegranate	
Mango	
Portugal	
Plum	

Name the fruit that represents the mode.

[1]

The mode will be Plum since it is chosen by most students.

Answer \_\_\_\_\_ Plum \_\_\_\_\_

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SECTION II

21.  $4\frac{3}{8} - 1\frac{1}{4} =$

[2]

$$\begin{aligned} 4\frac{3}{8} - 1\frac{1}{4} &= \frac{35}{8} - \frac{5}{4} \\ &= \frac{35}{8} - \frac{10}{8} \\ &= \frac{35-10}{8} \\ &= \frac{25}{8} \text{ or } 3\frac{1}{8} \end{aligned}$$

Answer \_\_\_\_\_  $3\frac{1}{8}$  \_\_\_\_\_

22. Work out the following and write the answers in ascending order.

[2]

$18.4 \div 4$  ,  $(1.7)^2 - 0.1$  ,  $1.4 \times 2.2$

$$\begin{aligned} 18.4 \div 4 &= \frac{18.4}{4} \\ &= 4.6 \end{aligned}$$

$$\begin{aligned} (1.7)^2 - 0.1 &= 2.89 - 0.1 \\ &= 2.79 \end{aligned}$$

$$1.4 \times 2.2 = 3.08$$

In ascending order, the numbers are: 2.79, 3.08, 4.6

Answer \_\_\_\_\_ 2.79, 3.08, 4.6 \_\_\_\_\_

23. For every 5 large buttons sewn into a dress, 2 small buttons are used. When 35 buttons are used altogether, how many of them would be large? [2]

$$\begin{aligned} \text{In each set, number of buttons sewn} &= 5 + 2 \\ &= 7 \end{aligned}$$

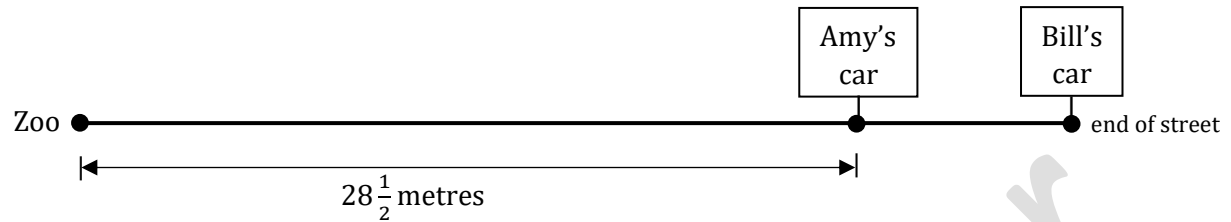
$$\begin{aligned} \text{Number of sets} &= 35 \div 7 \\ &= 5 \end{aligned}$$

$$\begin{aligned} \text{Number of large buttons sewn} &= 5 \times 5 \\ &= 25 \text{ buttons} \end{aligned}$$

Answer 25 buttons

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24. The diagram below shows the positions of the cars owned by Amy and Bill. Bill's car is at the end of the street whereas Amy is  $4\frac{5}{6}$  metres behind Bill.



Calculate the total distance from the zoo to the end of the street. [2]

$$\text{Distance from zoo to end of street} = 28\frac{1}{2} + 4\frac{5}{6}$$

$$= 28 + 4 + \frac{1}{2} + \frac{5}{6}$$

$$= 28 + 4 + \frac{3}{6} + \frac{5}{6}$$

$$= 28 + 4 + \frac{8}{6}$$

$$= 28 + 4 + 1 + \frac{1}{3}$$

$$= 33\frac{1}{3} \text{ m}$$

Answer                     $33\frac{1}{3}$                     metres

25. One eraser costs 47¢. Two erasers cost 94¢. Three erasers cost \$1.41. If the cost of each eraser remains the same, how much would 14 erasers cost? [2]

$$1 \text{ eraser} = 47\text{¢}$$

$$14 \text{ erasers} = 14 \times 47\text{¢}$$

$$= \$6.58$$

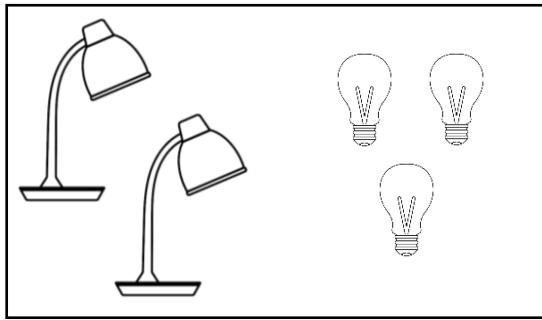
$$\begin{array}{r}
 14 \\
 \times 47 \\
 \hline
 560 \\
 98 \\
 \hline
 658 \\
 \hline
 \end{array}$$

Answer \$ \_\_\_\_\_ 6.58 \_\_\_\_\_

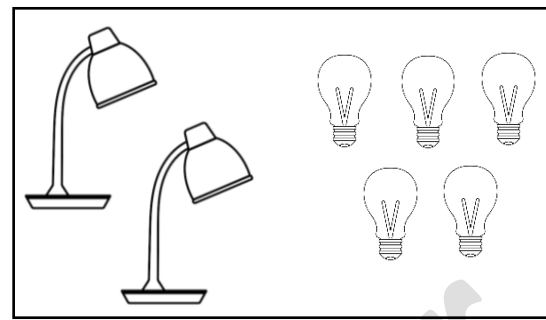
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26. The costs of lamps and lightbulbs are shown below.



**\$200.00**



**\$220.00**

Calculate the cost of 1 lamp.

[3]

$$2 \text{ lamps and } 3 \text{ lightbulbs cost} = \$200$$

$$2 \text{ lamps and } 5 \text{ lightbulbs cost} = \$220$$

$$2 \text{ lightbulbs cost} = \$220 - \$200$$

$$= \$20$$

$$1 \text{ lightbulb costs} = \$20 \div 2$$

$$= \$10$$

$$3 \text{ lightbulbs cost} = \$10 \times 3$$

$$3 \text{ lightbulbs cost} = \$30$$

Therefore,

$$2 \text{ lamps cost} = \$200 - \$30$$

$$= \$170$$

$$1 \text{ lamp costs} = \frac{\$170}{2}$$

$$= \$85$$

Answer \$                     85

27. Two students were given the following question:  $2.5 \times 0.1 = \square$

Olivia wrote  $2.5 \times 0.1 = \boxed{0.25}$

Alicia wrote  $2.5 \times 0.1 = \boxed{25.0}$

Using words or diagrams, explain whose answer is correct.

[2]

$$\begin{array}{r} 2.5 \\ \times 0.1 \\ \hline 0.25 \end{array}$$

Alternatively,

$$\begin{aligned} 2.5 \times 0.1 &= \frac{5}{2} \times \frac{1}{10} \\ &= \frac{5}{20} \\ &= \frac{1}{4} \quad \text{or} \quad 0.25 \end{aligned}$$

So, Olivia is correct.

Alicia's answer is incorrect because when a number is multiplied by a fraction, the result is always smaller. The fraction is  $\frac{1}{10}$  or 0.1. Hence,  $2.5 \times 0.1 = 0.25$ .

Alicia's answer, 25.0 is larger than 2.5 and 0.25 is smaller than 2.5.

Therefore, Olivia's answer is correct but Alicia is incorrect.

Answer \_\_\_\_\_ Olivia is correct \_\_\_\_\_

28. At a fruit juice outlet, there are two taps. The rates at which the juice is poured are shown below.

Tap 1	0.18 L per minute
Tap 2	0.13 L per minute

A server filled orange juice from Tap 1 for 6 minutes and then filled apple juice from Tap 2 for 7 minutes. Calculate the **total** amount of juice the server filled. [3]

From Tap 1,

$$\begin{aligned} \text{Amount of orange juice filled} &= 0.18 \times 6 \\ &= 1.08 \text{ L} \end{aligned}$$

From Tap 2,

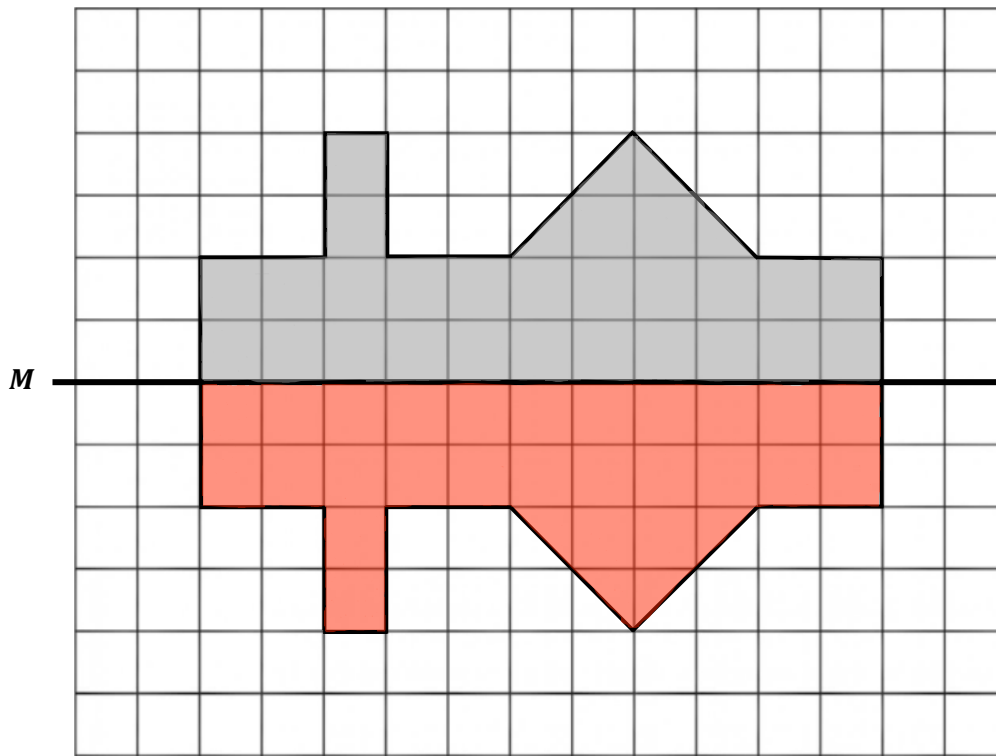
$$\begin{aligned} \text{Amount of apple juice filled} &= 0.13 \times 7 \\ &= 0.91 \text{ L} \end{aligned}$$

$$\begin{aligned} \text{Hence, the total amount of juice filled} &= 1.08 + 0.91 \\ &= 1.99 \text{ L} \end{aligned}$$

Answer 1.99 L

29. Complete the shape below using the line  $MN$  as the line of symmetry.

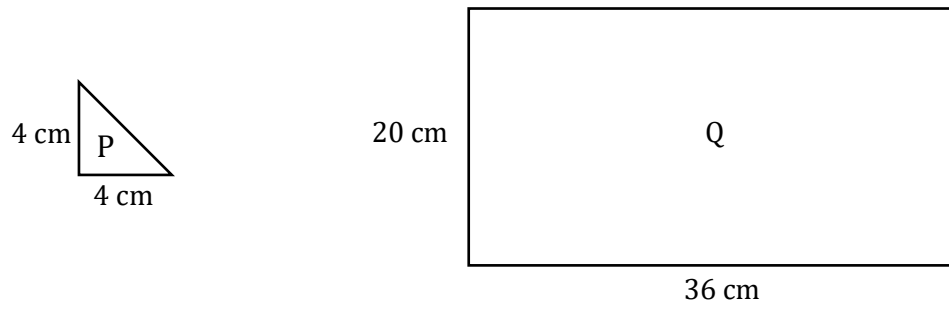
[2]



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30. How many of Shape P are needed to fully cover Shape Q?

[3]



$$\begin{aligned} \text{Area of Shape P} &= \frac{4 \times 4}{2} \\ &= \frac{16}{2} \\ &= 8 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of Shape Q} &= 20 \times 36 \\ &= 720 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Number of Shape P} &= 720 \div 8 \\ &= 90 \end{aligned}$$

Answer 90

31. Nial and Jacob bought spinning devices at a local games store that spun in a **clockwise** direction. Nial's device initially faced East whilst Jacob's device initially faced West. Nial's spinning device made half turns whereas Jacob's spinning device made quarter turns.

Complete the table below to show the direction the devices faced after each round. [3]

Round	Nial	Jacob
0 (Start)	East	West
1	West	<u>North</u>
2	<u>East</u>	East
3	West	<u>South</u>
4	East	West

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32. At a Sports event, each team was given 8 bottles of water, 5 sports towels and 2 whistles.

- (a) A total of 120 bottles of water was distributed among the teams. How many teams are at the Sports event? [1]

There are 120 bottles of water.

Each team was given 8 bottles of water.

$$\begin{aligned} \text{Number of teams} &= 120 \div 8 \\ &= 15 \end{aligned}$$

Answer \_\_\_\_\_ 15 \_\_\_\_\_ teams

- (b) How many more sports towels were given out than whistles? [1]

$$\begin{aligned} \text{Number of sports towels} &= 15 \times 5 \\ &= 75 \end{aligned}$$

$$\begin{aligned} \text{Number of whistles} &= 15 \times 2 \\ &= 30 \end{aligned}$$

$$\text{Difference} = 75 - 30$$

$$\text{Difference} = 45$$

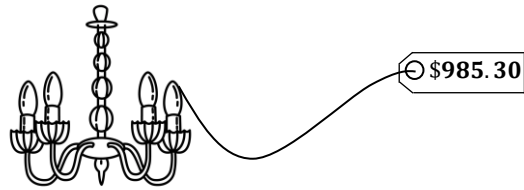
Answer \_\_\_\_\_ 45 \_\_\_\_\_ sports towels

33. Marcus has in his wallet:

seven \$100 notes

eight \$20 notes

six \$5 notes



Marcus wants to buy the chandelier shown above. How much more money does he need? [3]

$$\begin{aligned}
 \text{Amount of money Marcus has} &= (7 \times \$100) + (8 \times \$20) + (6 \times \$5) \\
 &= \$700 + \$160 + \$30 \\
 &= \$890
 \end{aligned}$$

$$\begin{aligned}
 \text{Amount of more money he needs} &= \$985.30 - \$890 \\
 &= \$95.30
 \end{aligned}$$

Answer \$                   95.30                  

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34. The time on a clock is correct at 5:00 am. The clock gains 4 minutes every hour. What time would the clock show when the correct time is 3:00 p.m.? [2]

Number of hours between 5:00 am and 3:00 p.m. = 10 hours

Number of minutes =  $10 \times 4$

= 40 minutes

$$\begin{array}{r}
 3:00 \\
 + \quad 40 \\
 \hline
 3:40 \\
 \hline
 \end{array}$$

Answer \_\_\_\_\_ 3:40 \_\_\_\_\_ p.m.

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35. A large container of water held 19 L 110 mL. A total of 16 L 860 mL was poured into another container. The remaining water was poured into small bottles.

- (a) What was the amount of water remaining in the container before it was poured into small bottles? [1]

$$\begin{aligned} \text{Amount of water remaining} &= 19 \text{ L } 110 \text{ mL} - 16 \text{ L } 860 \text{ mL} \\ &= 2 \text{ L } 250 \text{ mL} \end{aligned}$$

Answer 2 L 250 mL

- (b) How many small bottles were filled if each bottle held 375 mL? [2]

$$\begin{aligned} \text{Number of small bottles} &= 2 \text{ L } 250 \text{ mL} \\ &= \frac{2250}{375} \\ &= 6 \end{aligned}$$

Answer 6 bottles

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36. A volunteer of the dog pound bought feeding bowls and collars for the puppies. Each feeding bowl cost \$20.00 and each collar cost \$15.00. He bought 7 more feeding bowls than collars and his total bill is \$805.00.

Calculate the number of collars he bought.

[3]

The volunteer spent a total of  $\$20.00 \times 7 = \$140.00$  on the 7 feeding bowls

Therefore, he would have spent the remaining  $\$805.00 - \$140.00 = \$665.00$  on an equal number of feeding bowls and collars.

Now, 1 feeding bowl and 1 collar cost  $\$20.00 + \$15.00 = \$35.00$

Number of feeding bowls and collars bought with \$665 is  $\frac{\$665}{\$35} = 19$ .

So, \$380 will get him 19 feeding bowls ( $19 \times \$20.00 = \$380.00$ )

And \$285 will get him 19 collars ( $19 \times \$15.00 = \$285.00$ )

Hence,

Number of collars bought = 19 collars

Number of feeding bowls bought =  $19 + 7$

feeding bowls bought = 26 feeding bowls

Answer \_\_\_\_\_ 19 \_\_\_\_\_ collars

SECTION III

37. Mr. Harris received a bonus of \$650. He kept  $\frac{2}{5}$  for himself and gave  $\frac{3}{10}$  of the remainder to his daughter Millie. He shared the remaining money between his grandchildren Zack and Grayson such that Zack received \$33 less than Grayson.

How much money did Grayson receive?

[4]

$$\text{Mr. Harris} = \$650$$

Mr. Harris kept  $\frac{2}{5}$  for himself.

$$\begin{aligned} \text{Amount of money Mr. Harris has} &= \frac{2}{5} \times \$650 \\ &= \$260 \end{aligned}$$

$$\begin{aligned} \text{Remainder} &= 1 - \frac{2}{5} \\ &= \frac{5}{5} - \frac{2}{5} \\ &= \frac{3}{5} \end{aligned}$$

Mr. Harris gave  $\frac{3}{10}$  of the remainder to his daughter Millie.

$$\begin{aligned} \text{Fraction of money given to Millie} &= \frac{3}{10} \times \frac{3}{5} \\ &= \frac{9}{50} \end{aligned}$$

$$\begin{aligned} \text{Amount of money Millie has} &= \frac{9}{50} \times \$650 \\ &= \$117 \end{aligned}$$

$$\begin{aligned} \text{Amount of remaining money} &= \$650 - (\$260 + \$117) \\ &= \$650 - \$377 \\ &= \$273 \end{aligned}$$

Zack received \$33 less than Grayson.

$$\text{Remove excess} = \$273 - \$33$$

$$= \$240$$

$$\text{Amount of money Zack received} = \frac{\$240}{2}$$

$$= \$120$$

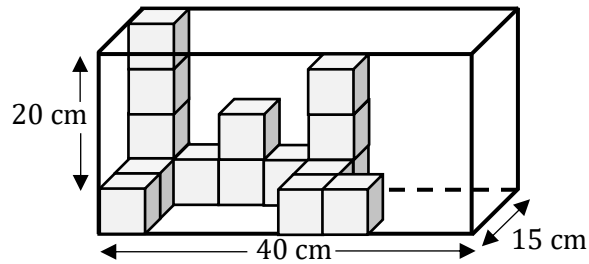
$$\text{Amount of money Grayson received} = \$120 + \$33$$

$$= \$153$$

Answer \$ \_\_\_\_\_ 153 \_\_\_\_\_

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38. The larger box contains cubes of equal size. Each cube measures 5 cm on all sides.



(a) How many cubes are in the box? [1]

By counting, there are 16 cubes in the box.

Answer \_\_\_\_\_ 16 \_\_\_\_\_ cubes

(b) How many more cubes of the same size are needed to fill the box? [3]

Number of cubes along length =  $40 \div 5$

Number of cubes along length = 8

Number of cubes along width =  $15 \div 5$

Number of cubes along width = 3

Number of cubes along height =  $20 \div 5$

Number of cubes along height = 4

Number of cubes that can be in the box =  $8 \times 3 \times 4$

= 96 cubes

There are already 16 cubes in the box.

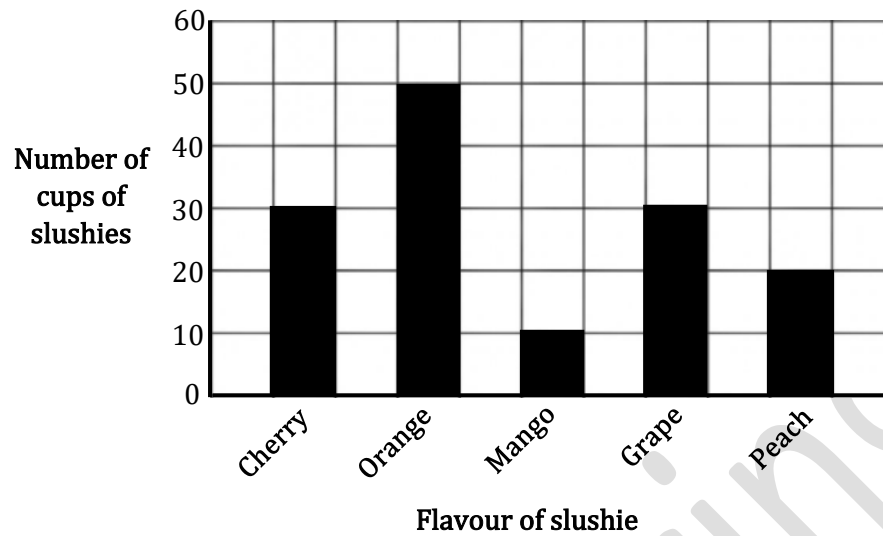
Hence, number of more cubes needed to fill the box =  $96 - 16$

= 80 cubes

Answer \_\_\_\_\_ 80 \_\_\_\_\_ cubes

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39. At a juice bar, the owner has 60 cups of slushies in five different flavours. The bar graph below shows the number of cups of slushies that were **not** sold after a Sports event.



(a) Which flavour of slushie sold the most at the Sports event? [1]

The shortest bar is that of mango which reads 10 mango slushies were not sold.

Hence,  $60 - 10 = 50$  slushies were sold and this represents the most.

Answer \_\_\_\_\_ Mango \_\_\_\_\_

(b) How many cups of slushies were sold **altogether** at the event? [1]

The number of slushies sold,

Cherry  $60 - 30 = 30$

Orange  $60 - 50 = 10$

Mango  $60 - 10 = 50$

Grape  $60 - 30 = 30$

Peach  $60 - 20 = 40$  +

Total  $\underline{\underline{= 160}}$

Answer \_\_\_\_\_ 160 \_\_\_\_\_ cups



(c) How many more cups of mango slushies than grape slushies were sold?

[2]

Number of cups of mango slushies sold = 50

Number of cups of grape slushies sold = 30

Therefore,  $50 - 30 = 20$  more cups of mango slushies were sold than grape slushies.

Answer \_\_\_\_\_ **20** \_\_\_\_\_ cups

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40. The table below shows the number of positive reviews obtained by 2 franchises in three locations.

City	Franchise 1	Franchise 2
1	35	
2	42	
3	49	59
<b>Total</b>		<b>165</b>

(a) Calculate the mean number of positive reviews obtained by Franchise 1. [1]

$$\begin{aligned} \text{Total number of positive reviews obtained by Franchise 1} &= 35 + 42 + 49 \\ &= 126 \end{aligned}$$

$$\begin{aligned} \text{Mean number of positive reviews} &= \frac{126}{3} \\ &= 42 \text{ reviews} \end{aligned}$$

Answer           42           reviews

(b) Given that Franchise 2 obtained the same number of positive reviews in City 1 and City 2, find the number of positive reviews obtained in City 2. [1]

$$\text{Number of positive reviews obtained in City 3} = 59 \text{ reviews}$$

$$\begin{aligned} \text{Number of positive reviews obtained in City 1 and City 2} &= 165 - 59 \\ &= 106 \text{ reviews} \end{aligned}$$

$$\begin{aligned} \text{Number of positive reviews obtained in City 2} &= 106 \div 2 \\ &= 53 \text{ reviews} \end{aligned}$$

Answer           53           reviews

- (c) A mean of 50 is required for the franchise to be listed as one of the top franchises in a popular magazine. How many more positive reviews did Franchise 1 needed to acquire in order to qualify for this list? [2]

$$\begin{aligned} \text{A mean of 50 in 3 cities means that the total number of positive reviews} &= 50 \times 3 \\ &= 150 \end{aligned}$$

$$\begin{aligned} \text{So, Franchise 1 needed to acquire} &= 150 - 126 \\ &= 24 \text{ reviews} \end{aligned}$$

Answer 24 reviews

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