

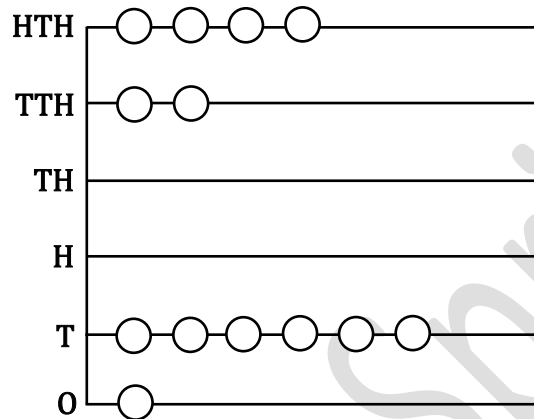
Sample Exam 13 - Solutions

Session 13

Total: 75 marks

SECTION I

1. Write down the numeral represented below. [1]



Answer 420 061

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

$$49 = \boxed{7}^2$$

3. Multiply 234 by 6

[1]

$$\begin{array}{r} 234 \\ \times 6 \\ \hline 1404 \end{array}$$

Answer _____ 1404 _____

4. Calculate $376 \div 8$

[1]

$$\begin{array}{r} 47 \\ 8 \overline{) 376} \\ \underline{32} \\ 56 \\ \underline{56} \\ 0 \end{array}$$

Answer _____ 47 _____

5. What is $\frac{51}{4}$ as a mixed number?

[1]

$$\frac{51}{4} = 12\frac{3}{4}$$

Answer _____ $12\frac{3}{4}$ _____

6. Find the value of $2\frac{5}{7} - \frac{3}{7}$.

[1]

$$\begin{aligned} 2\frac{5}{7} - \frac{3}{7} &= \frac{19}{7} - \frac{3}{7} \\ &= \frac{16}{7} \\ &= 2\frac{2}{7} \end{aligned}$$

Answer _____ $2\frac{2}{7}$ _____

7. Circle the 3 that has the value of 3 hundredths.

[1]

3 3 3 .3 3 3

8. Insert ONE of the following symbols in the box below to make the statement correct.

[1]

> = <

0.45

<

0.54

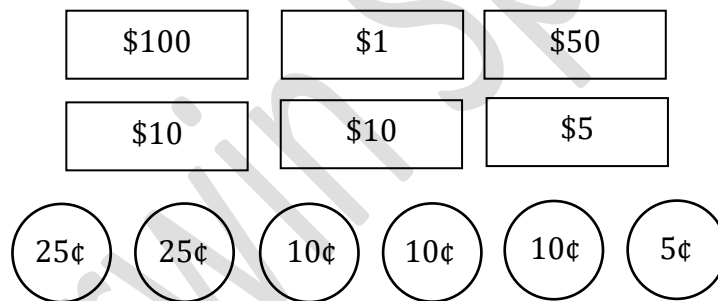
9. Calculate 60% of 800.

[1]

$$\begin{aligned}
 60\% \text{ of } 800 &= \frac{60}{100} \times 800 \\
 &= 60 \times 8 \\
 &= 480
 \end{aligned}$$

Answer _____ 480 _____

10. Susy went to the store to purchase a dress. She used the bills and coins below to buy the dress. Calculate the cost of the dress. [1]



$$\begin{aligned}
 \text{Cost} &= \$100 + \$1 + \$50 + \$10 + \$10 + \$5 + \$0.25 + \$0.25 + \$0.10 + \$0.10 + \$0.05 \\
 \text{Cost} &= \$176.85
 \end{aligned}$$

Answer \$ _____ 176.85 _____

11. Write down the MOST appropriate standard unit for recording the length of a notebook. [1]

Answer _____ centimetres _____

12. Complete the statement below. [1]

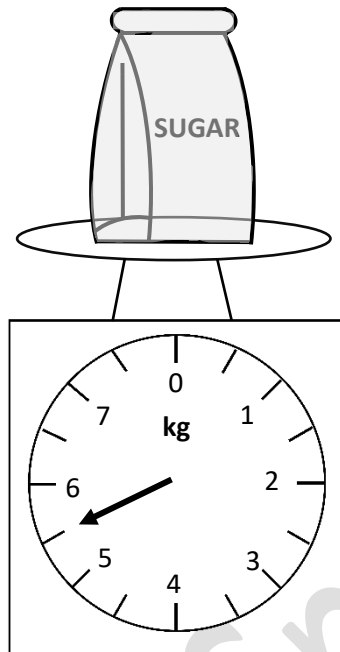
$$\begin{aligned} 13.7 \text{ m} &= 13.7 \times 100 \text{ cm} \\ &= 1\,370 \text{ cm} \end{aligned}$$

$$13.7 \text{ m} = \text{_____ } 1\,370 \text{ _____ cm}$$

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13. Kate uses the scale below to record the mass of a pack of sugar.

[1]

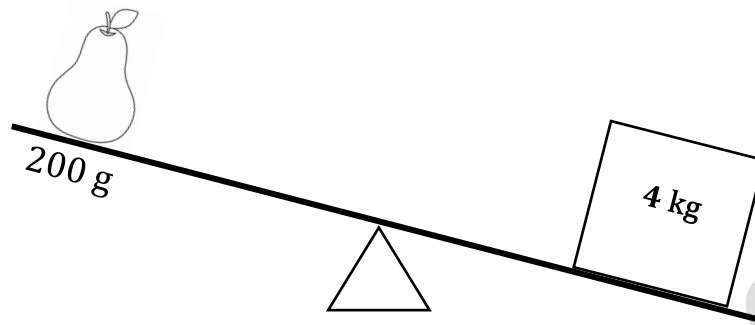


Write down the mass of the pack of sugar below.

Answer 5.5 kg

14. How many more pears of the same mass will balance the scale?

[1]



$$4 \text{ kg} = 4 \times 1000$$

$$= 4000 \text{ g}$$

To balance the scale, we need $4000 - 200 = 3800 \text{ g}$ on the left side.

$$200 \text{ g} = 1 \text{ pear}$$

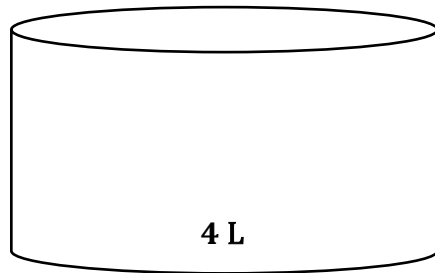
$$3800 \text{ g} = \frac{3800}{200}$$

$$= 19 \text{ pears}$$

Answer _____ 19 _____ pears

15. An empty container and a full juice box are shown below.

[1]



Container



Juice

How many juice boxes will fill the container?

$$4 \text{ L} = 4 \times 1000$$

$$= 4\ 000 \text{ ml}$$

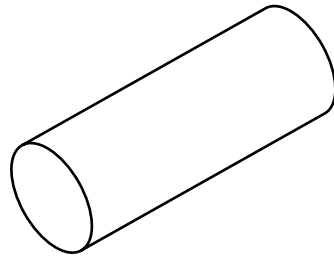
$$250 \text{ ml} = 1 \text{ juice box}$$

$$4\ 000 \text{ ml} = \frac{4\ 000}{250}$$

$$= 16 \text{ juice boxes}$$

Answer _____ **16** _____ boxes

16. The cross-section of the prism shown below is a circle.



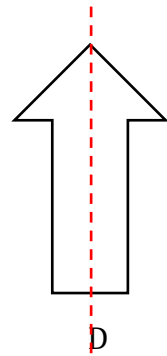
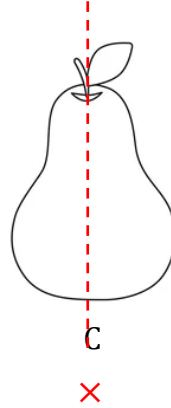
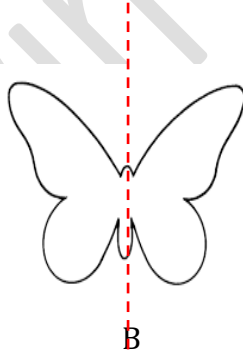
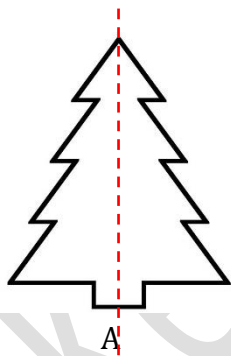
What is the name of the prism?

[1]

Answer _____ **cylinder** _____

17. Which of the shapes shown below is NOT symmetrical?

[1]



Answer _____ **C** _____

18. The tally chart below shows the favourite jellybean flavours by a class of students.

Favourite Jellybean Flavours

| Transport | Tally |
|-----------|-------|
| Cherry | ## |
| Pineapple | ## ## |
| Grape | ## |
| Apple | ## |

Which jellybean flavour represents the mode?

[1]

Answer _____ **pineapple** _____

19. The table below shows the number of points scored by Jack in four rounds of an online game.

Jack's Points

| | Round 1 | Round 2 | Round 3 | Round 4 |
|-----------------|---------|---------|---------|---------|
| Points obtained | 85 | 47 | 78 | 80 |

What was Jack's mean score?

[1]

$$\text{Mean} = \frac{\text{Total Number of Points}}{\text{Number of rounds}}$$

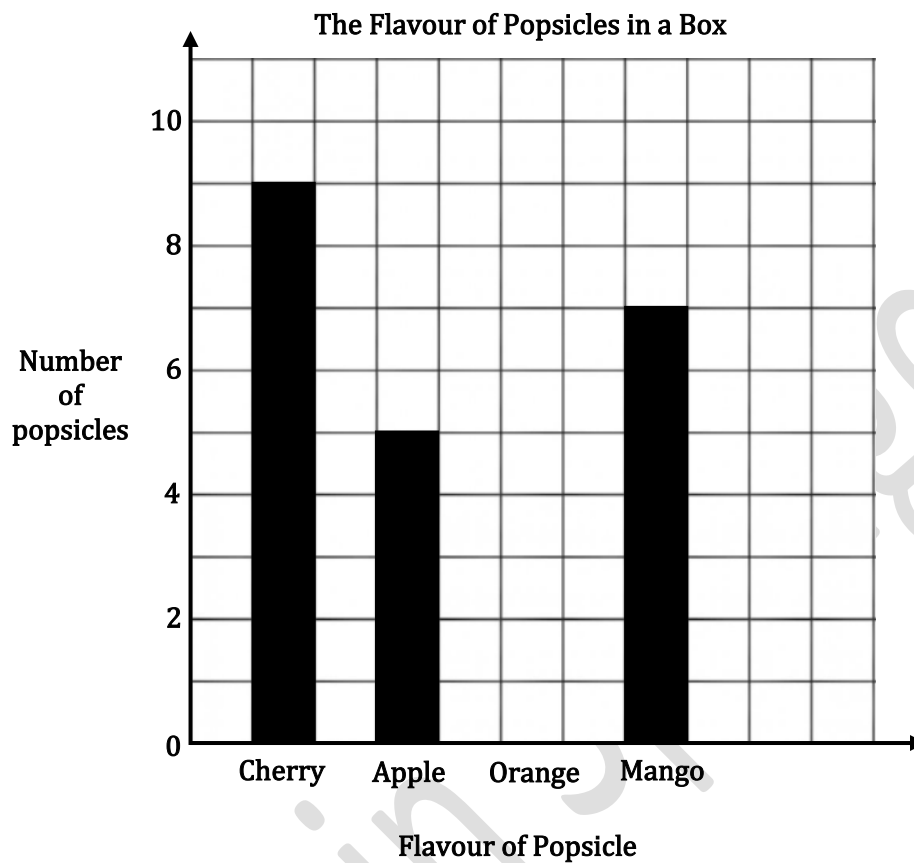
$$= \frac{85+47+78+80}{4}$$

$$= \frac{290}{4}$$

$$= 72.5$$

Answer _____ 72.5 _____

20. The incomplete bar graph below shows the flavour of popsicles in a box.



If there are 30 popsicles, how many of the popsicles are orange?

[1]

Number of cherry popsicles = 9

Number of apple popsicles = 5

Number of mango popsicles = 7

Number of orange popsicles = $30 - (9 + 5 + 7)$

= $30 - 21$

= 9

Answer _____ 9 _____ orange popsicles

SECTION II

21. Write the following numbers in descending order. [2]

124.7 346.3 64.83 75.74

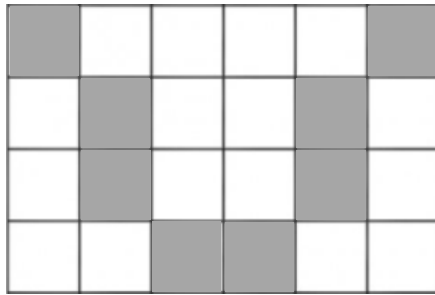
Answer _____ 346.3 , 124.7 , 75.74 , 64.83 _____

22. Write the correct number in each shape below to complete the number sentences. [2]

$$249 \times 25 = (249 + \triangle 1) \times 25 - 25$$

$$249 \times 25 = \square 250 \times 25 - 25$$

23. The shaded fraction of the square represents 24 employees at a company.



What is the **total** number of employees at the company?

[2]

Number of shaded squares = 8

8 shaded squares = 24 employees

$$1 \text{ shaded square} = \frac{24}{8}$$

$$= 3 \text{ employees}$$

24 squares = 24×3

4 squares = 72 employees

Answer _____ **72** _____ employees

24. Jason's age is a factor of 60. Six years ago, his age was a multiple of 8.

What is Jason's age now?

[2]

Factors of 60 are: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60.

Let Jason's age be 30.

$$\begin{aligned}\text{Six years ago, Jason's age} &= 30 - 6 \\ &= 24 \text{ years}\end{aligned}$$

The number 24 is a multiple of 8.

Hence, Jason's current age is 30 years.

Answer _____ 30 _____ years

25. Mrs. Diana bought 54 m of string. She used $\frac{11}{18}$ of the string to make necklaces. She cut the remaining string into equal lengths to make bracelets. Each bracelet was made with $\frac{3}{7}$ m of string.

How many bracelets did she make?

[3]

$$\text{Fraction of string used to make bracelets} = 1 - \frac{11}{18}$$

$$= \frac{18}{18} - \frac{11}{18}$$

$$= \frac{7}{18}$$

$$\text{Amount of string used to make bracelets} = \frac{7}{18} \times 54$$

$$= 21 \text{ m}$$

$$\frac{5}{6} \text{ m} = 1 \text{ bracelet}$$

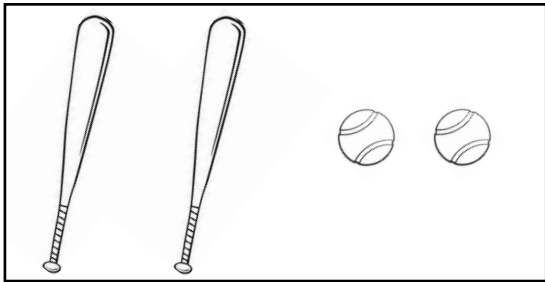
$$21 \text{ m} = 21 \div \frac{3}{7}$$

$$= 21 \times \frac{7}{3}$$

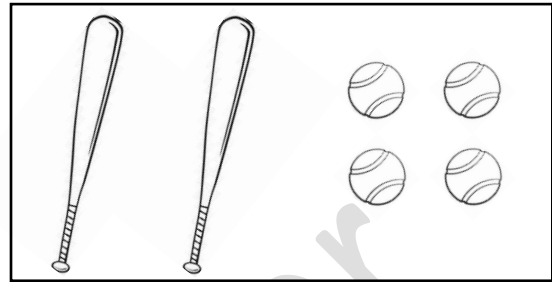
$$49 \text{ m} = 49 \text{ bracelets}$$

Answer _____ 49 _____ bracelets

26. The costs of baseball bats and balls are shown below.



\$248.00



\$308.00

Calculate the cost of 1 baseball bat.

[3]

$$2 \text{ bats and } 2 \text{ balls cost} = \$248$$

$$2 \text{ bats and } 4 \text{ balls cost} = \$308$$

$$\begin{aligned} 2 \text{ balls cost} &= \$308 - \$248 \\ &= \$60 \end{aligned}$$

Therefore,

$$\begin{aligned} 2 \text{ bats cost} &= \$248 - \$60 \\ &= \$188 \end{aligned}$$

$$\begin{aligned} 1 \text{ bat costs} &= \frac{\$188}{2} \\ &= \$94 \end{aligned}$$

Answer \$ 94

27. A store received a total of \$232.00 from the sale of glow sticks and glitter bombs.

The cost of a glow stick is \$8.00 and the cost of a glitter bomb is \$12.00. He sold 9 **more** glow sticks than glitter bombs.

Calculate the **total** number of glow sticks sold.

[3]

$$\text{Glow stick} = \$8$$

$$\text{Glitter bomb} = \$12$$

$$\begin{aligned} 9 \text{ glow sticks} &= 9 \times \$8 \\ &= \$72 \end{aligned}$$

$$\begin{aligned} \text{Remove excess} &= \$232 - \$72 \\ &= \$160 \end{aligned}$$

$$\begin{aligned} 1 \text{ glow stick and 1 glitter bomb} &= \$8 + \$12 \\ &= \$20 \end{aligned}$$

$$\begin{aligned} \text{Number of groups} &= \frac{\$160}{\$20} \\ &= 8 \end{aligned}$$

$$\begin{aligned} \text{Total glow sticks sold} &= 8 + 9 \\ &= 17 \end{aligned}$$

Answer _____ **17** _____ glow sticks

28. Kristal's weekly allowance was \$75.00. She received $\frac{1}{6}$ of her weekly allowance for each of the five additional chores she completed.

Calculate Kristal's **total** allowance for the week.

[3]

Kristal completed five additional chores.

$$\begin{aligned} \text{Fraction she receives} &= \frac{1}{6} \times 5 \\ &= \frac{5}{6} \end{aligned}$$

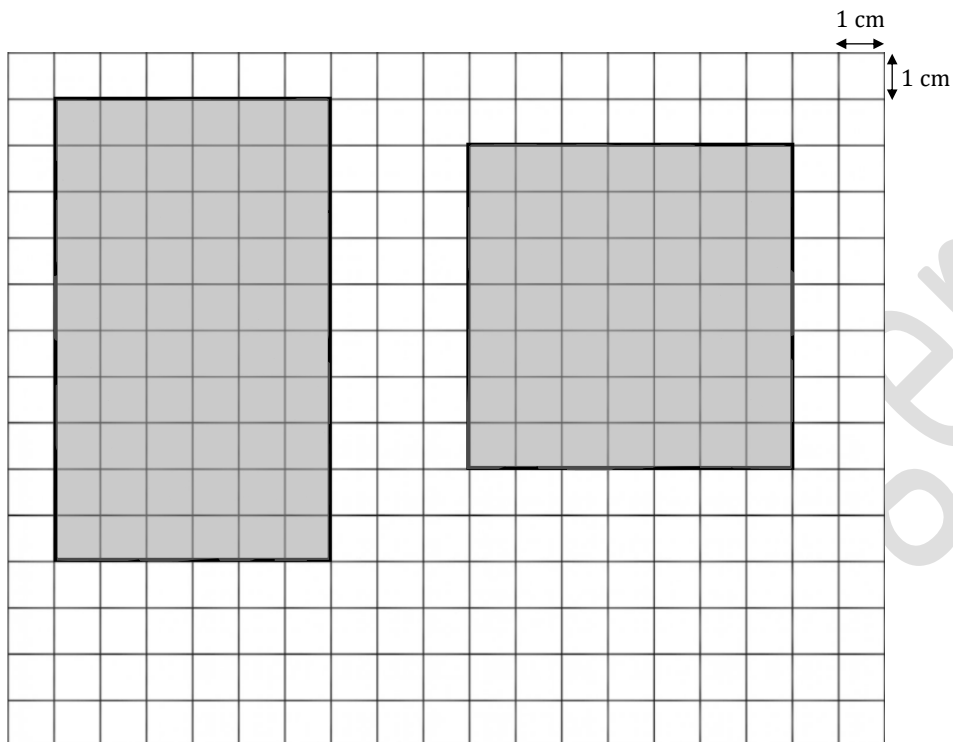
$$\begin{aligned} \text{Allowance received for chores} &= \frac{5}{6} \times \$75 \\ &= \$62.50 \end{aligned}$$

$$\text{Kristal's total allowance for the week} = \$75.00 + \$62.50$$

$$\text{Total allowance for the week} = \$137.50$$

Answer \$ 137.50

29. A square grid and a rectangle are drawn on the 1 cm grid below.



What is the **difference** in their perimeters?

[2]

$$\text{Perimeter of rectangle} = 2 \times (10 + 6)$$

$$= 2 \times 16$$

$$= 32 \text{ cm}$$

$$\text{Perimeter of square} = 4 \times 7$$

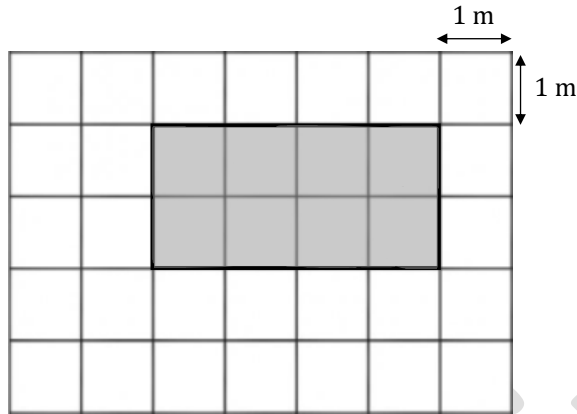
$$= 28 \text{ cm}$$

$$\text{Difference} = 32 - 28$$

$$= 4 \text{ cm}$$

Answer _____ 4 _____ cm

30. The shaded rectangle on the 1 m grid below represents a flower bed. The flower bed is $\frac{1}{8}$ of the area of a square park.



Flower bed represents 8 shaded blocks.

$\frac{1}{8}$ of the area of the square park = 8 blocks

Hence, area of the square park = 8×8

Area of square park = 64 m^2

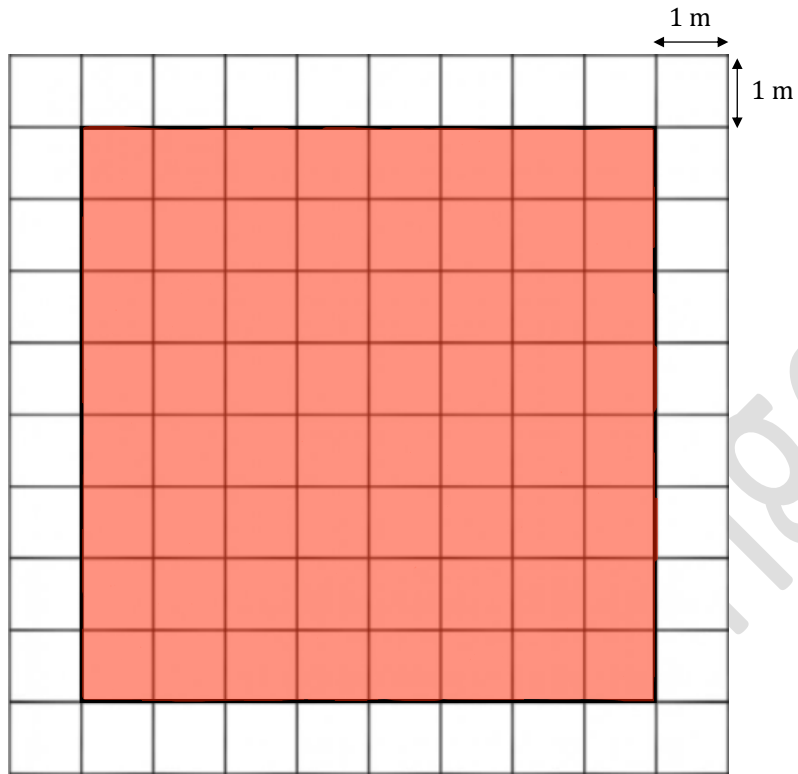
Length of each side of square park = $\sqrt{64}$

Length of each side of square park = 8 m

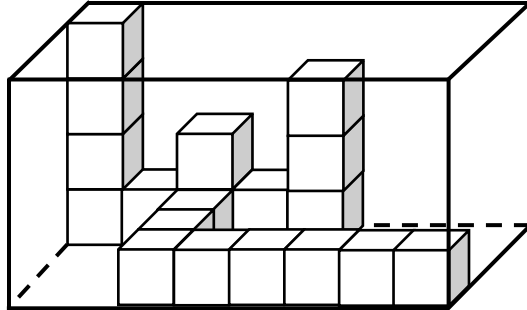


On the grid below, draw the **square** park and shade its area.

[2]



31. Small identical cubes are placed inside a cuboid as shown below.



How many **more** of these cubes are needed to fill the cuboid completely? [3]

Length of cuboid = 8 cubes

Width of cuboid = 4 cubes

Height of cuboid = 4 cubes

Number of cubes to fill the cuboid = $8 \times 4 \times 4$
= 128 cubes

Number of cubes presently in box = 19 cubes

Number of more cubes required to fill the box completely = $128 - 19$
= 109 cubes

Answer _____ **109** _____ cubes

32. The time on a clock is correct at 9:00 am. The clock loses 8 minutes every hour.

What time would the clock show when the correct time is 2:00 p.m.? [3]

Number of hours between 9:00 am and 2:00 p.m. = 5 hours

Number of minutes = 8×5

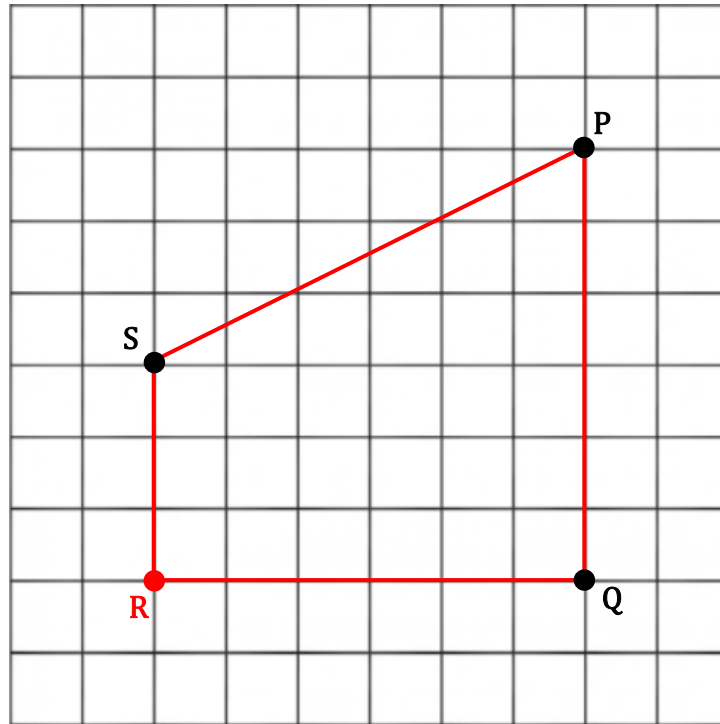
= 40 minutes

$$\begin{array}{r}
 2:00 \\
 - \quad 40 \\
 \hline
 1:20 \\
 \hline
 \end{array}$$

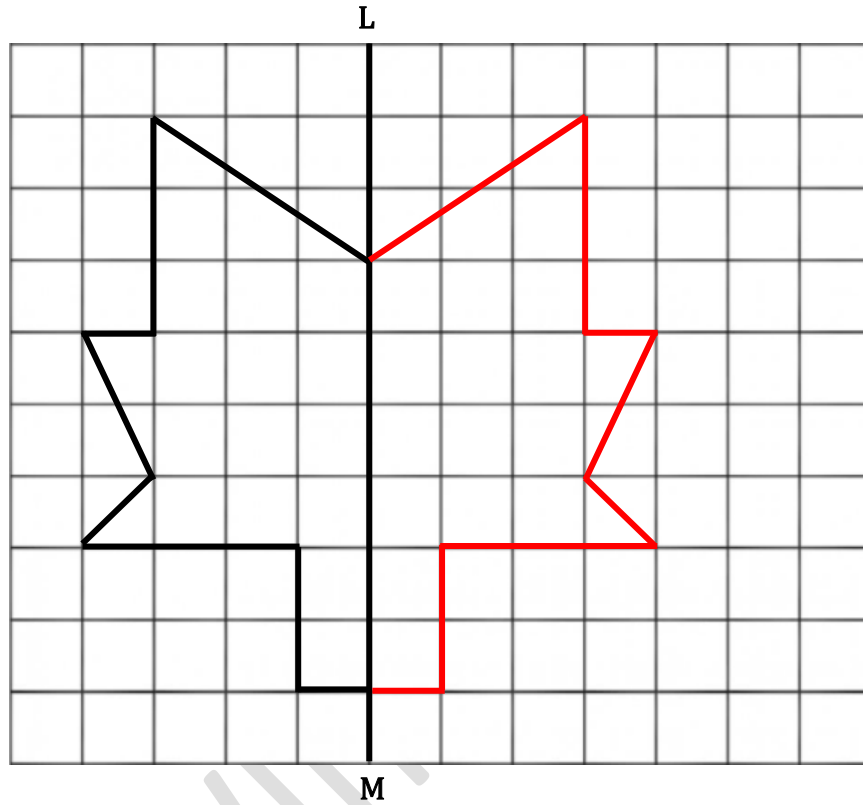
Answer _____ 1:20 _____ p.m.

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33. On the grid below, label the position of the point R such that the quadrilateral PQRS has two right angles. Draw lines to form the quadrilateral PQRS. [2]



34. An incomplete symmetrical shape is shown on the grid below. Using LM as the line of symmetry, complete the shape. [2]



35. The mean of five numbers was 90. When one number was removed the mean remained 90.

Explain how this was possible.

[2]

Answer: The number removed was also 90.

If the mean of the five numbers was 90.

Then the sum of the numbers = $90 \times 5 = 450$.

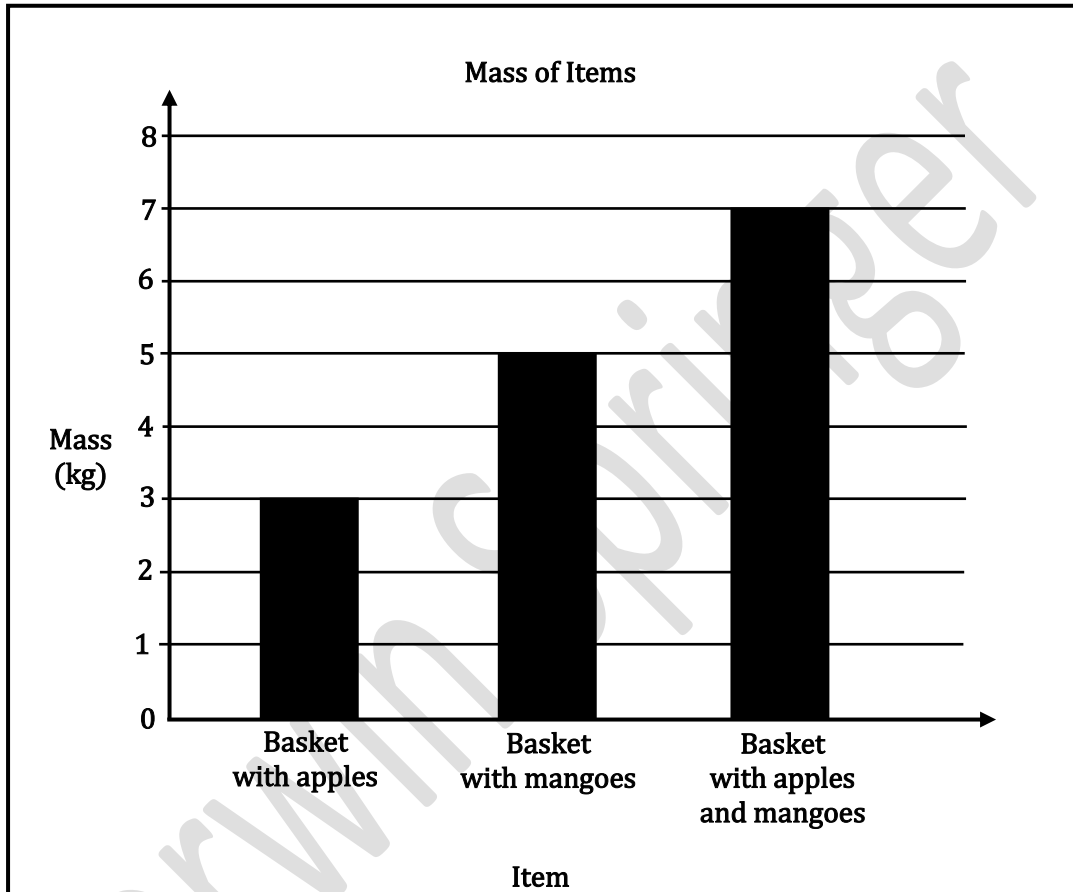
If we remove one number and the mean is still 90, then the new total is $90 \times 4 = 360$.

Therefore, the number removed must be $450 - 360 = 90$.

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36. A basket with apples was weighed. The same basket was weighed with mangoes.

Finally, the basket was weighed with the apples and the mangoes. The graph below shows the mass of the items.



What is the mass of the basket?

[3]

$$\begin{aligned} \text{Basket with Apples} + \text{Basket with mangoes} &= 3 + 5 \\ &= 8 \text{ kg} \end{aligned}$$

$$\text{Basket with apples and mangoes} = 7 \text{ kg}$$

Hence,

$$\text{Mass of the basket} = 8 - 7$$

$$= 1 \text{ kg}$$

Answer _____ 1 _____ kg

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SECTION III

37. Maxine had 120 stickers. She kept $\frac{1}{4}$ for herself and gave $\frac{2}{5}$ of the remainder to Olivia.

She shared the remaining stickers between Holly and Sasha such that Holly received 6 more stickers than Sasha.

How many stickers did Holly receive?

[4]

Maxine = 120 stickers

Maxine kept $\frac{1}{4}$ for herself.

Number of stickers Maxine has = $\frac{1}{4} \times 120$
= 30 stickers

$$\begin{aligned} \text{Remainder} &= 1 - \frac{1}{4} \\ &= \frac{4}{4} - \frac{1}{4} \\ &= \frac{3}{4} \end{aligned}$$

Maxine gave $\frac{2}{5}$ of the remainder to Olivia.

$$\begin{aligned} \text{Fraction of stickers given to Olivia} &= \frac{2}{5} \times \frac{3}{4} \\ &= \frac{3}{10} \end{aligned}$$

$$\begin{aligned} \text{Number of stickers Olivia has} &= \frac{3}{10} \times 120 \\ &= 36 \text{ stickers} \end{aligned}$$

$$\begin{aligned} \text{Number of remaining stickers} &= 120 - (30 + 36) \\ &= 120 - 66 \\ &= 54 \text{ stickers} \end{aligned}$$

Holly received 6 more stickers than Sasha.

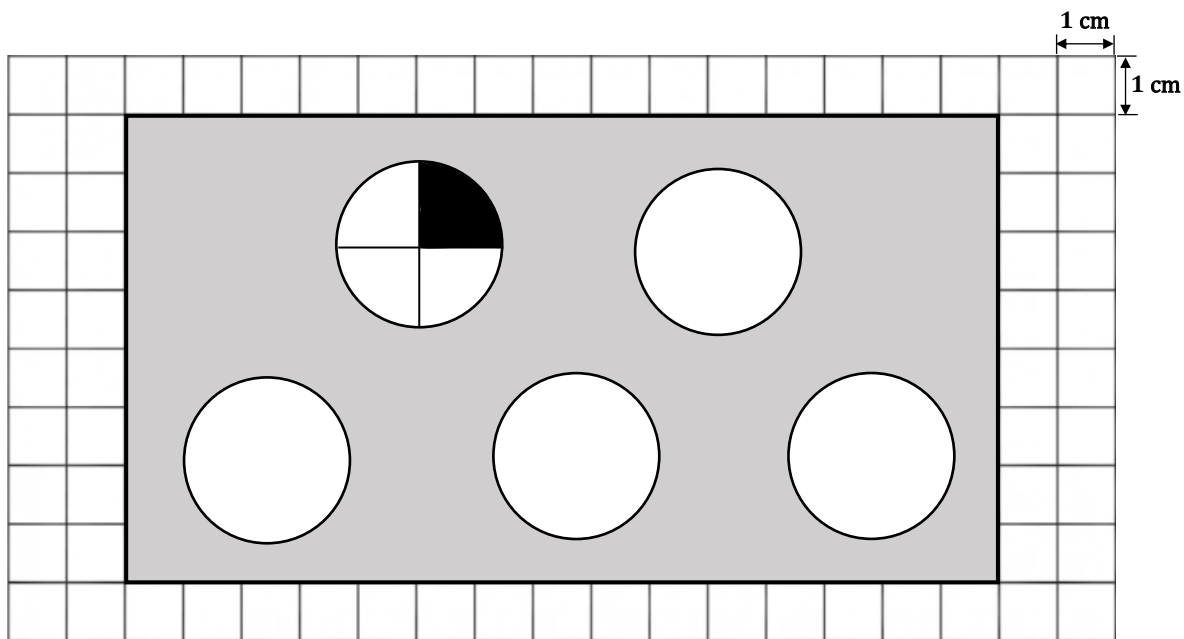
$$\begin{aligned} \text{Remove excess} &= 54 - 6 \\ &= 48 \text{ stickers} \end{aligned}$$

$$\begin{aligned} \text{Number of stickers Sasha received} &= \frac{48}{2} \\ &= 24 \text{ stickers} \end{aligned}$$

$$\begin{aligned} \text{Number of stickers Holly received} &= 24 + 6 \\ &= 30 \text{ stickers} \end{aligned}$$

Answer _____ **30** _____ stickers

38. A rectangle is drawn on the 1 cm grid below. Five identical circles partially cover the rectangle. Each circle is divided into four equal parts. The area of the shaded fraction shown in the circle is 3 cm^2 .



What area of the rectangle is **not** covered by the circles?

[4]

Area of rectangle = $l \times w$

Area of rectangle = 15×8

Or, area = 120 cm^2

Area of 1 circle = $4 \times$ Area of one shaded fraction

= 4×3

= 12 cm^2

$$\begin{aligned}\text{Area of 5 circles} &= 12 \times 5 \\ &= 60 \text{ cm}^2\end{aligned}$$

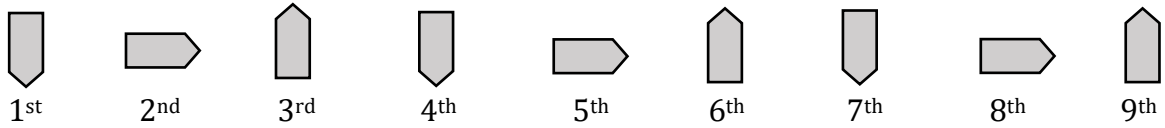
Therefore,

$$\begin{aligned}\text{Area of rectangle not covered by the circles} &= 120 - 60 \\ &= 60 \text{ cm}^2\end{aligned}$$

Answer _____ 60 _____ cm^2

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39. The incomplete pattern below shows the position of its elements.



(a) Explain the pattern rule. [1]

Answer: The element starts pointing South, turns 90 degrees anticlockwise to East, turns 90 degrees anticlockwise to North and then the pattern repeats.

(b) Draw the 22nd element. [1]

The 22nd element is as follows:

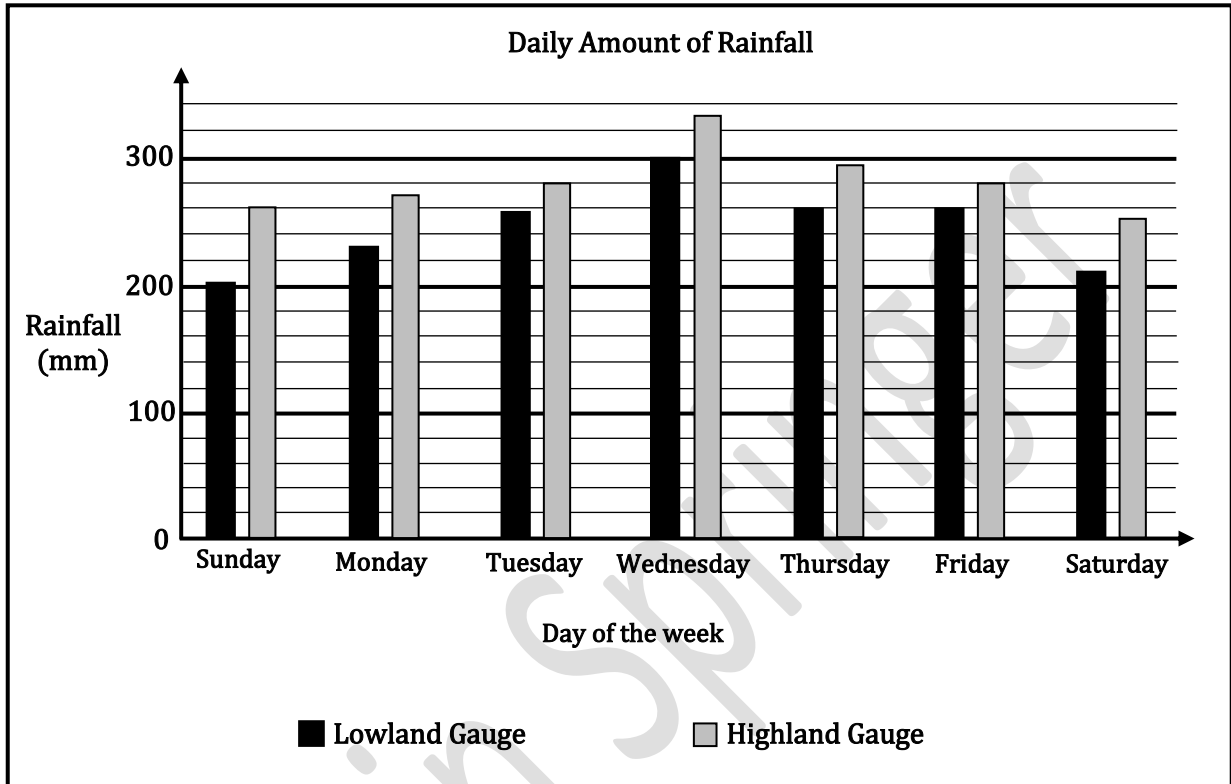


(c) State the position at which the pattern begins repeating for the sixth time. [2]

| | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1 st | 2 nd | 3 rd | 4 th | 5 th | 6 th |
| 1,2,3 | 4,5,6 | 7,8,9 | 10,11,12 | 13,14,15 | 16,17,18 |

Answer _____ 16th position _____

40. The bar graph below shows the amount of rainfall measured by a lowland gauge and a highland gauge for one week.



(a) What is the **difference** between the lowland gauge and highland gauge readings on the wettest day? [1]

The wettest day is Wednesday.

Lowland Gauge = 300 mm

Highland Gauge = 330 mm

Difference = 330 – 300

= 30 mm

Answer _____ 30 _____ mm

(b) On which days is the difference between the lowland gauge and highland gauge readings the same? [2]

$$\begin{aligned}\text{Difference on Monday} &= 270 - 230 \\ &= 40 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Difference on Saturday} &= 250 - 210 \\ &= 40 \text{ mm}\end{aligned}$$

Answer _____ **Monday and Saturday** _____

(c) On which days is the difference between the lowland gauge and highland gauge readings the largest? [1]

Answer _____ **Sunday** _____