

Sample Exam 11 – Solutions

Session 11

Total: 75 marks

SECTION I

1. Write down the value of the underlined digit in the place value chart below. [1]

Hundreds of Thousands	Tens of Thousands	Thousand	Hundred	Tens	Ones
8	<u>5</u>	2	1	9	0

The value of the underlined digit 5 is $5 \times 10\,000 = 50\,000$.

Answer _____ **50 000** _____

2. Write down the largest **prime** number in the box below. [1]

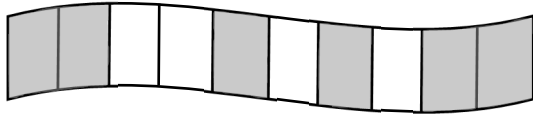
89	53	91
41	63	67

The prime numbers are 41, 53, 67 and 89. The largest of these is 89.

Answer _____ **89** _____

3. What percentage of the shape below is shaded?

[1]



There are 10 strips in all.

6 of the strips are shaded.

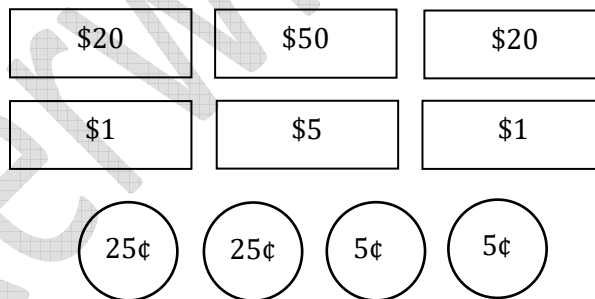
Assuming that the size of the strips (shaded and unshaded are equal),

$$\begin{aligned} \text{Percentage of shape that is shaded} &= \frac{6}{10} \times 100 \\ &= \frac{3}{5} \times 100 \\ &= 60\% \end{aligned}$$

Answer _____ **60** _____ %

4. Calculate the total value of the bills and coins below.

[1]



$$\begin{aligned} \text{Cost} &= \$20 + \$50 + \$20 + \$1 + \$5 + \$1 + \$0.25 + \$0.25 + \$0.05 + \$0.05 \\ &= \$97.60 \end{aligned}$$

Answer \$ _____ **97.60** _____

5. If $\frac{5}{9}$ of a number is 155, what is the number?

[1]

$$\frac{5}{9} \text{ of a number} = 155$$

$$\begin{aligned} \text{The number is} &= 155 \div \frac{5}{9} \\ &= 155 \times \frac{9}{5} \\ &= 279 \end{aligned}$$

Answer _____ **279** _____

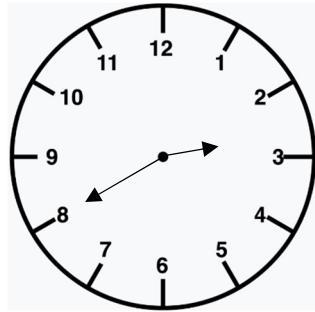
6. Add 2.49 and 5.65

[1]

$$\begin{array}{r} 2.49 \\ + 5.65 \\ \hline 8.14 \end{array}$$

Answer _____ **8.14** _____

7. A clock is shown below.



Write the time shown in the clock in digital notation. [1]

The hour hand lies between 2 and 3.

The minute hand points to 8.

So, it is 40 minutes past 2.

Hence, the digital notation is 2:40.

Answer _____ 2:40 _____

8. Calculate 70% of 600. [1]

$$70\% \text{ of } 600 = \frac{70}{100} \times 600$$

$$= 70 \times 6$$

$$= 420$$

Answer _____ 420 _____

9. Calculate $29.4 \div 7$.

[1]

$$\begin{array}{r}
 04.2 \\
 7 \overline{) 29.4} \\
 \underline{-28} \\
 14 \\
 \underline{-14} \\
 0
 \end{array}$$

Answer _____ 4.2 _____

10. Complete the statement below.

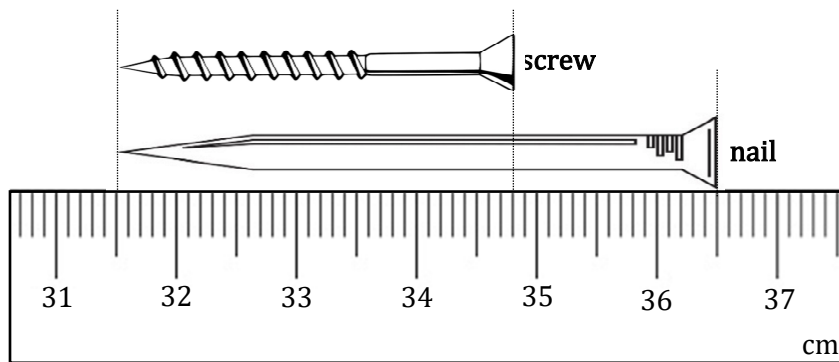
[1]

$$\begin{aligned}
 2.41 \text{ m} &= 2.41 \times 100 \text{ cm} \\
 &= 241 \text{ cm}
 \end{aligned}$$

2.41 m = _____ 241 _____ cm

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11. The lengths of a screw and a nail are shown below.



What is the **difference** in length between the screw and the nail?

[1]

$$\begin{aligned} \text{Length of nail} &= 36.5 - 31.5 \\ &= 5 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Length of screw} &= 34.8 - 31.5 \\ &= 3.3 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Difference in length between the nail and screw} &= 5 - 3.3 \text{ cm} \\ &= 1.7 \text{ cm} \end{aligned}$$

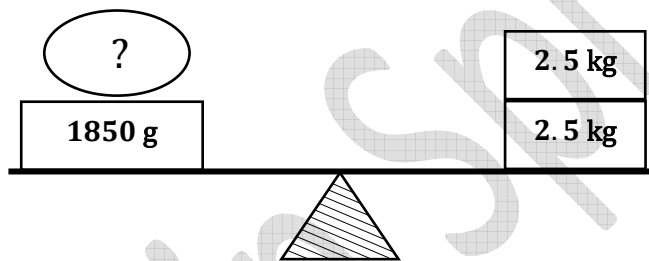
Answer _____ **1.7** _____ cm

12. How many 150 ml servings would you get from a bottle of wine containing 1200 ml? [1]

$$\begin{aligned} \text{Number of servings} &= \frac{1200}{150} \\ &= \frac{120}{15} \\ &= \frac{40}{5} \\ &= 8 \end{aligned}$$

Answer _____ **8** _____ servings

13. Two objects balance the scale below. What is the mass of the oval object? [1]



$$\begin{aligned} \text{Mass on right side} &= 2.5 + 2.5 \\ &= 5 \text{ kg} \end{aligned}$$

$$1 \text{ kg} = 1000 \text{ g}$$

$$5 \text{ kg} = 5 \times 1000$$

$$= 5000 \text{ g}$$

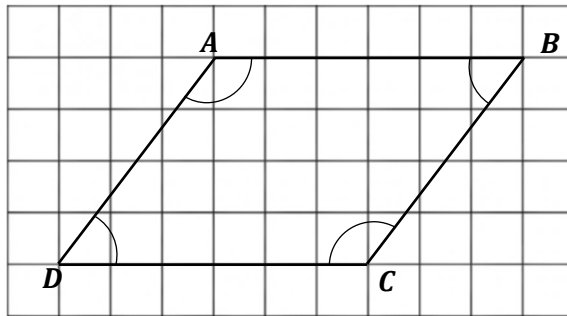
Now,

$$5000 - 1850 = 3150 \text{ g}$$

Answer _____ **3150** _____ g

14. Consider the diagram below. List two angles which are more than 90° .

[1]



B appears to be less than 90° . Also, *D* appears to be less than 90° .

A appears to be greater than 90° . Also, *C* appears to be greater than 90° .

Answer _____ *Angles A and C* _____

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15. Complete the bill shown below.

[1]

Item	Price
	\$12.70
	\$ <u>18.85</u>
	\$22.25
Total	\$53.80

Total cost of the pair of socks and hat = $\$12.70 + \22.25

$$= \$34.95$$

$$\begin{array}{r} \$12.70 \\ + \$22.25 \\ \hline \end{array}$$

$$= \$34.95$$

Total including the gloves = \$53.80

Hence, the cost of the gloves is

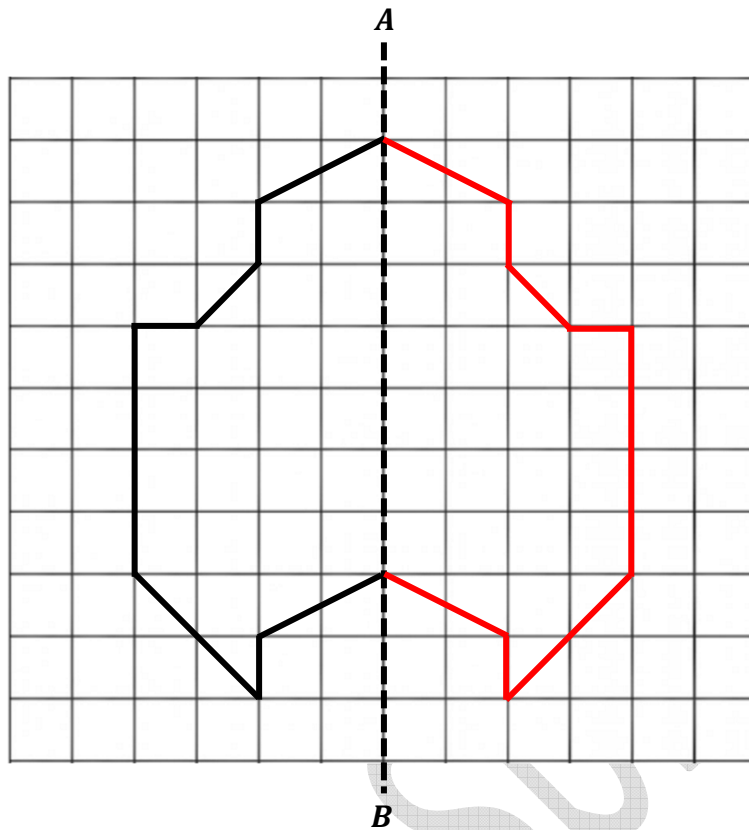
$$\begin{array}{r} \$53.80 \\ - \$34.95 \\ \hline \end{array}$$

$$= \$18.85$$

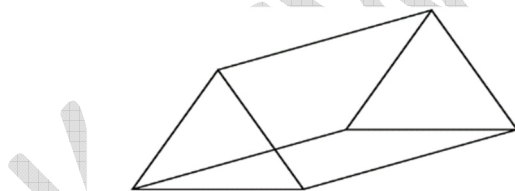
$$\underline{\underline{\$18.85}}$$

16. Complete the shape below using AB as the line of symmetry.

[1]



17. The cross-section of the prism shown below is a triangle.



What is the name of the prism?

[1]

Answer _____ **triangular prism** _____

18. The tally chart below shows the favourite genre of movies by a class of 30 students.

Favourite Movie Genre

Genre	Tally
Mystery	≠
Fantasy	≠
Horror	≠
Comedy	≠

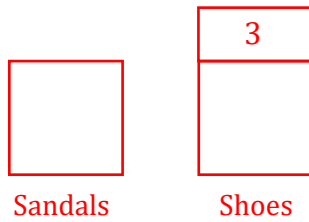
Which movie genre represents the mode?

[1]

Answer _____ **Comedy** _____

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19. Marissa has 13 pairs of footwear. All of her footwear are either shoes or sandals. She has three less sandals than shoes. How many pairs of shoes does Marissa have? [1]



$$\begin{aligned} \text{Remove excess} &= 13 - 3 \\ &= 10 \end{aligned}$$

$$2 \text{ blocks} = 10$$


$$\begin{aligned} 1 \text{ block} &= \frac{10}{2} \\ &= 5 \end{aligned}$$





$$\begin{aligned} \text{Number of pairs of shoes} &= 5 + 3 \\ &= 8 \end{aligned}$$

Answer 8 pairs of shoes


20. Complete the pictograph below for a class of 40 students.


[1]

 = 4 students

Toothpaste	Students
Colgate	
Sensodyne	
Crest	
Aquafresh	

Number of circles = 7

1  = 4 students

7  = 7×4

= 28 students

Number of students that use Sensodyne = $40 - 28$

= 12 students

12 students = $\frac{12}{4}$

= 3 

SECTION II

21. $2\frac{1}{4} + 3\frac{1}{2} + 1\frac{3}{4} =$

[2]

$$\begin{aligned} 2\frac{1}{4} + 3\frac{1}{2} + 1\frac{3}{4} &= \frac{9}{4} + \frac{7}{2} + \frac{7}{4} \\ &= \frac{9}{4} + \frac{14}{4} + \frac{7}{4} \\ &= \frac{9+14+7}{4} \\ &= \frac{15}{2} \text{ or } 7\frac{1}{2} \end{aligned}$$

Answer _____ $7\frac{1}{2}$ _____

22. Five-eighths of a number is 35. What is **one-quarter** of the same number?

[2]

$\frac{5}{8}$ of a number is 35.

Therefore, $\frac{1}{8}$ of the number is $\frac{35}{5} = 7$.

The (whole) number = 8×7

$$= 56$$

One-quarter of the number = $56 \div 4$

$$= 14$$

Answer _____ 14 _____

23. Rachel washed 25 dishes. She washed $\frac{5}{7}$ the number of dishes that Greta washed. How many dishes did they two girls wash **altogether**? [2]

Rachel washed 25 dishes.

So, $\frac{5}{7}$ of the number of dishes that Greta washed is 25.

The number of dishes that Greta washed

$$25 \div \frac{5}{7} = 25 \times \frac{7}{5}$$

$$= 35$$

Together, they washed = 25 + 35

= 60 dishes

Answer _____ **60** _____ dishes

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24. The seats in an auditorium are numbered in sequence from 1 to 224. There are 8 seats in each row.

(a) How many rows are there in the auditorium? [1]

$$\begin{aligned} \text{Number of rows} &= 224 \div 8 \\ &= 28 \text{ rows} \end{aligned}$$

Answer _____ **28** _____ rows

(b) In which row can the seat numbered 85 be found? [1]

Each row has 8 seats.

10 rows has 80 seats numbered 1-80.

11th row has 8 seats numbered 81-88.

Since 85 is between 81-88, the seat numbered 85 will be on the 11th row.

Answer _____ **11th row** _____

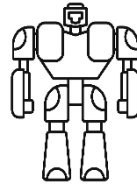
25. The prices of three different toys are shown below.



Drum set
\$65.00



Wind-up car
\$40.00



Robot
\$75.00

Mark bought the toys shown in the table below. Complete the table.

[3]

Toy	Quantity	Total Cost
Drum set	2	<u>\$130.00</u>
Wind-up car	3	\$120.00
Robot	<u>3</u>	<u>\$225.00</u>
TOTAL		\$475.00

$$\text{One drum set} = \$65.00$$

$$2 \text{ drum sets} = 2 \times \$65$$

$$= \$130$$

$$\text{Cost of robots bought} = \$475 - \$130 - \$120$$

$$= \$225$$

$$\text{Each robot costs } \$75.$$

$$\text{Number of robots bought} = \$225 \div \$75$$

$$= 3 \text{ robots}$$

26. There are 800 residents in a small town, and 360 of them are children. What percentage of the residents are adults? [2]

Number of residents = 800 residents

Number of children = 360 children

Number of adults = $800 - 360$
 = 440 adults

Percentage of adults = $\frac{440}{800} \times 100\%$
 = $\frac{11}{20} \times \frac{100}{1}$
 = 55%

Answer _____ 55 _____ %

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27. There are 600 pieces of fruit in a basket, and 210 of them are apples.

(a) What percentage of the fruit in the basket is not apples? [1]

$$\begin{aligned} \text{Number of pieces of fruit that are not apples} &= 600 - 210 \\ &= 390 \text{ pieces} \end{aligned}$$

$$\begin{aligned} \text{Percentage of fruit pieces that is not apples} &= \frac{390}{600} \times 100 \\ &= \frac{13}{20} \times \frac{100}{1} \\ &= 65\% \end{aligned}$$

Answer _____ 65 _____ %

(b) If 55% of the pieces of fruit in a basket are pineapple, how many of them are not? [2]

$$\begin{aligned} 55\% \text{ of the } 600 &= \frac{55}{100} \times 600 \\ &= 330 \text{ pieces of fruit are pineapple} \end{aligned}$$

$$\begin{aligned} \text{Number of fruit pieces that are not pineapple} &= 600 - 330 \\ &= 270 \text{ pieces} \end{aligned}$$

Answer _____ 270 _____ pieces

28. Fiona bakes pastries over a period of 6 days. The number of pastries made follows a pattern as shown in the table below. The number of pastries read on Day 1 and Day 2 are **not** shown.

Day	1	2	3	4	5	6
Number of pastries made			36	41	47	54

How many pastries were made altogether for the 6 days? [2]

The number of pastries made appears to be increasing by 1 more than the difference from the previous day.

$$36 + 5 = 41$$

$$41 + 6 = 47$$

$$47 + 7 = 54$$

So, we would expect $36 - 4$ pastries to be made on Day 2 which is 32.

And $32 - 3$ pastries to be made on Day 1 which is 29.

The total number of pastries made = $29 + 32 + 36 + 41 + 47 + 54$

$$\text{pastries made} = 239 \text{ pastries}$$

Answer 239 pastries

29. A carpenter uses $1\frac{1}{4}$ metres of wood to make a bookshelf. The carpenter made 9 bookshelves.

(a) How many metres of wood were used in total? [2]

$$1 \text{ bookshelf} = 1\frac{1}{4} \text{ metres of wood}$$

$$9 \text{ bookshelves} = 1\frac{1}{4} \times 9$$

$$= \frac{5}{4} \times 9$$

$$= \frac{45}{4}$$

$$= 11\frac{1}{4} \text{ metres of wood}$$

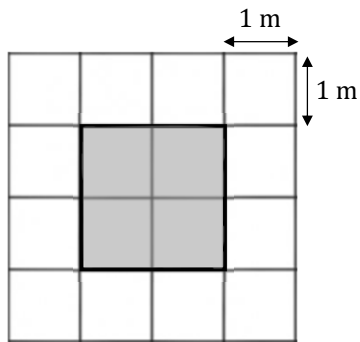
Answer _____ $11\frac{1}{4}$ _____ metres

(b) Between which two whole numbers does your answer lie? [1]

The number $11\frac{1}{4}$ lies between 11 and 12.

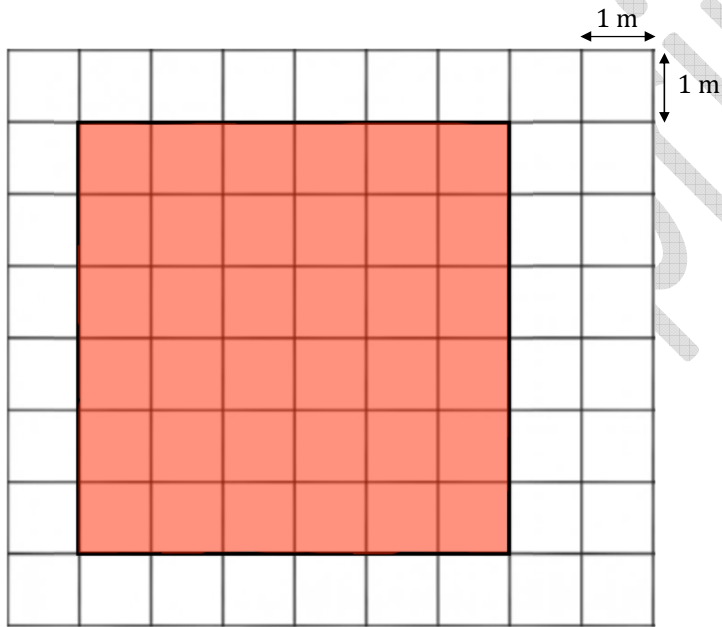
Answer _____ 11 and 12 _____

30. The shaded square on the 1 m grid below represents a block of ice. The ice block is $\frac{1}{9}$ of the area of a square skating rink.



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

[2]



Ice block represents 4 shaded blocks.

$\frac{1}{9}$ of the area of the skating rink = 4 blocks

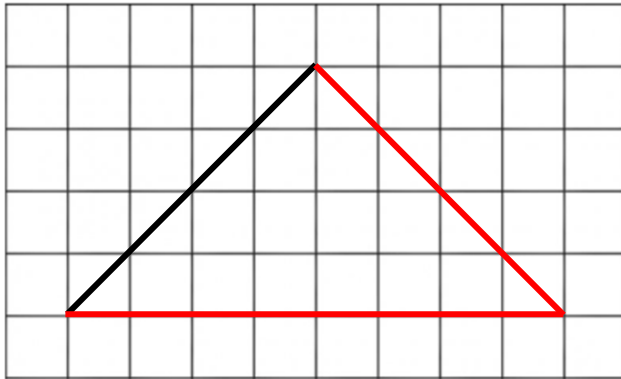
Hence, area of the skating rink = 9×4

$$= 36 \text{ m}^2$$

Length of each side of skating rink = $\sqrt{36}$

$$= 6 \text{ m}$$

31. There is an incomplete triangle shown on the grid below.

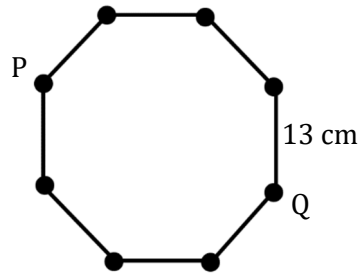


The triangle has two equal angles. Complete the shape.

[2]

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32. The shape below is made up of 8 dots connected by 8 lines of equal length.



(a) What is the name of this shape? [1]

The shape has 8 sides.

It is an octagon.

Answer _____ octagon _____

(b) Calculate the value of half the perimeter of the shape. [2]

$$\text{Perimeter of shape} = 8 \times 13$$

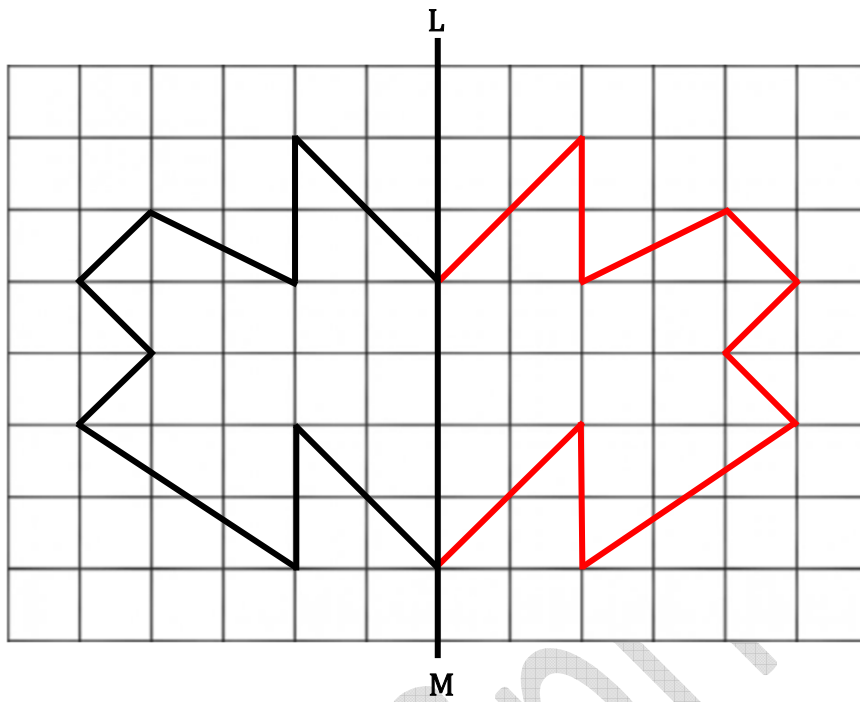
$$\text{Perimeter of shape} = 104 \text{ cm}$$

$$\text{Perimeter of half of the shape} = \frac{104}{2}$$

$$\text{Perimeter of half of the shape} = 52 \text{ cm}$$

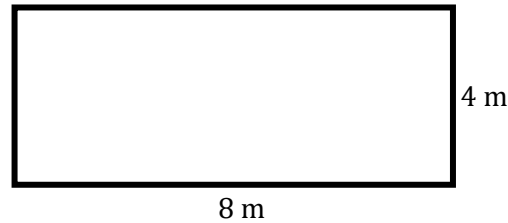
Answer _____ 52 _____ cm

33. An incomplete symmetrical shape is shown on the grid below. Using LM as the line of symmetry, complete the shape. [3]



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34. For a gardening project, a landscaper is required to plant a flower bed that is 8 metres long and 4 metres wide as shown below.



- (a) Calculate the perimeter of the flower bed. [1]

$$\begin{aligned} \text{Perimeter} &= 2(8 + 4) \\ &= 2(12) \\ &= 24 \text{ m} \end{aligned}$$

Answer _____ **24** _____ m

- (b) The landscaper places flower plant, 50 cm apart, along the outline of the shape. How many flower plants are needed? [2]

Flower plants are placed 50 cm apart.

For the **length of the rectangle**, $8 \text{ m} = 800 \text{ cm}$.

$$\begin{aligned} \text{The number of 50 cm intervals that will cover a length of 800 cm} &= 800 \div 50 \\ &= 16 \end{aligned}$$

The number of stickers is one more than the intervals, so 17 flower plants will be placed along the 800 cm length, including the corners.

For the **width of the rectangle**, $4 \text{ m} = 400 \text{ cm}$.

$$\begin{aligned} \text{The number of 50 cm intervals that will cover a width of 400 cm} &= 400 \div 50 \\ &= 8 \end{aligned}$$

The number of flower plants is one more than the intervals, so 9 flower plants will be placed along the 400 cm width, including the corners.

However, the corners are already accounted for, so we must subtract two flower plants and this would leave $9 - 2 = 7$ flower plants.

Therefore, one length and one width uses $17 + 7 = 24$ flower plants.

Hence, the number of flower plants needed along the entire outline of the rectangle is $24 \times 2 = 48$ flower plants.

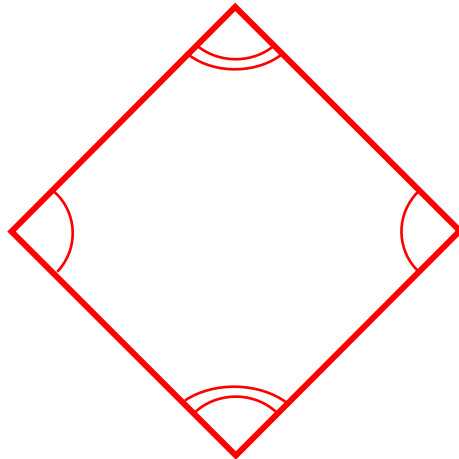
Answer _____ **48** _____ flower plants

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35. (a) Using the space below, draw a rhombus.

[1]

A rhombus is shown below:



(b) State two properties of a rhombus.

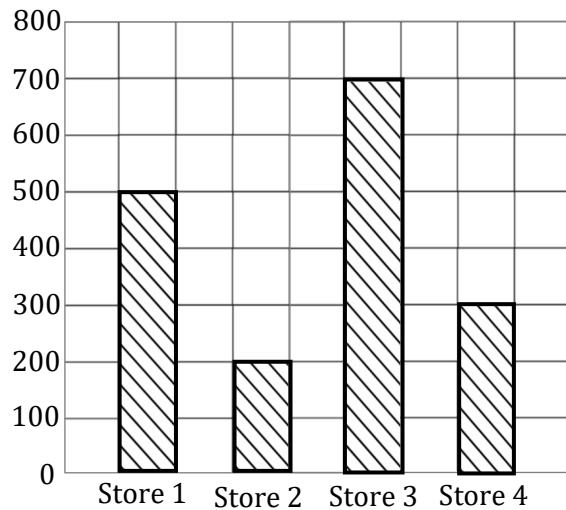
[2]

Properties of a rhombus include:

- (1) Two pairs of parallel sides
- (2) all sides are equal
- (3) opposite angles are equal
- (4) it has two lines of symmetry

Answer _____ any two properties listed above _____

36. The bar graph below shows the number of customer who visited four different stores in a mall.



The total number of customers visiting the mall is 2000. Giving a reason for your answer, which store should be given more promotion to attract more customers. [2]

Store 3 has the most customers visiting its store.

Total number of customers = $500 + 200 + 700 + 300$

= 1700

Number of customers who did not visit any store = $2000 - 1700$

= 300

Answer: Store 3 should be given more promotion to attract more customers. Store 3 appears to have good product and are likely to attract the 300 customers who did not yet visit any store.

SECTION III

37. Mrs. Khan went to a home goods store to buy items for her new house. Here is a list of the different items that she bought.

List of Items	
	Towel \$45.00
	Bedsheet \$55.00
	Rug \$80.00

She bought 6 towels and an odd number of bedsheets and rugs. The total bill was \$515. Calculate the number of bedsheets and rugs Mrs. Khan bought.

[4]

$$\begin{aligned} \text{Cost of 6 towels} &= 6 \times \$45 \\ &= \$270 \end{aligned}$$

$$\begin{aligned} \text{So, the cost of the bedsheets and rugs} &= \$515 - \$270 \\ &= \$245 \end{aligned}$$

$$\begin{aligned} \text{3 bedsheets costs} &= 3 \times \$55 \\ \text{3 bedsheets costs} &= \$165 \end{aligned}$$

$$\text{1 rug costs} = \$80$$

Now, $\$165 + \$80 = \$245$. Also, 1 and 3 are odd numbers.

Answer _____ **3 bedsheets and 1 rug** _____

38. At a flower shop, only roses and lilies are sold. There are 640 flowers in total and the number of roses is four times the number of lilies.

(a) How many roses are there in the shop? [1]

$$\begin{aligned} \text{Number of roses} &= \frac{4}{5} \text{ of flowers} \\ &= \frac{4}{5} \times 640 \\ &= 512 \text{ roses} \end{aligned}$$

Answer _____ 512 _____ roses

(b) $\frac{5}{8}$ of the roses have bloomed nicely and the others have wilted.

How many roses are wilted? [1]

$$\begin{aligned} \text{Fraction of roses that have wilted} &= 1 - \frac{5}{8} \\ &= \frac{8}{8} - \frac{5}{8} \\ &= \frac{3}{8} \end{aligned}$$

$$\begin{aligned} \text{Number of wilted roses} &= \frac{3}{8} \times 512 \\ &= 192 \end{aligned}$$

Answer _____ 192 _____ roses

- (c) A bouquet is made using 16 lilies. How many bouquets can be made using ALL the lilies at the flower shop? [2]

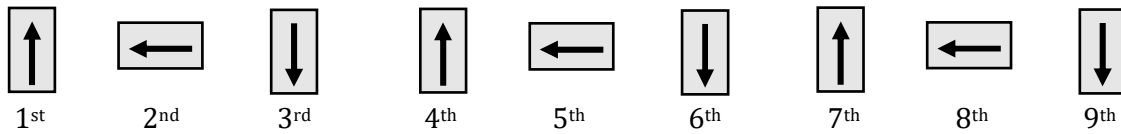
$$\begin{aligned} \text{Number of lilies} &= 640 - 512 \\ &= 128 \end{aligned}$$

$$\begin{aligned} \text{Number of bouquets} &= \frac{128}{16} \\ &= 8 \text{ bouquets} \end{aligned}$$

Answer _____ 8 _____ bouquets

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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 North, turns 45 degrees anticlockwise to West, turns 45 degrees anticlockwise to South and then the pattern repeats.

(b) Draw the 25th element.

[1]

The 25th element is as follows:



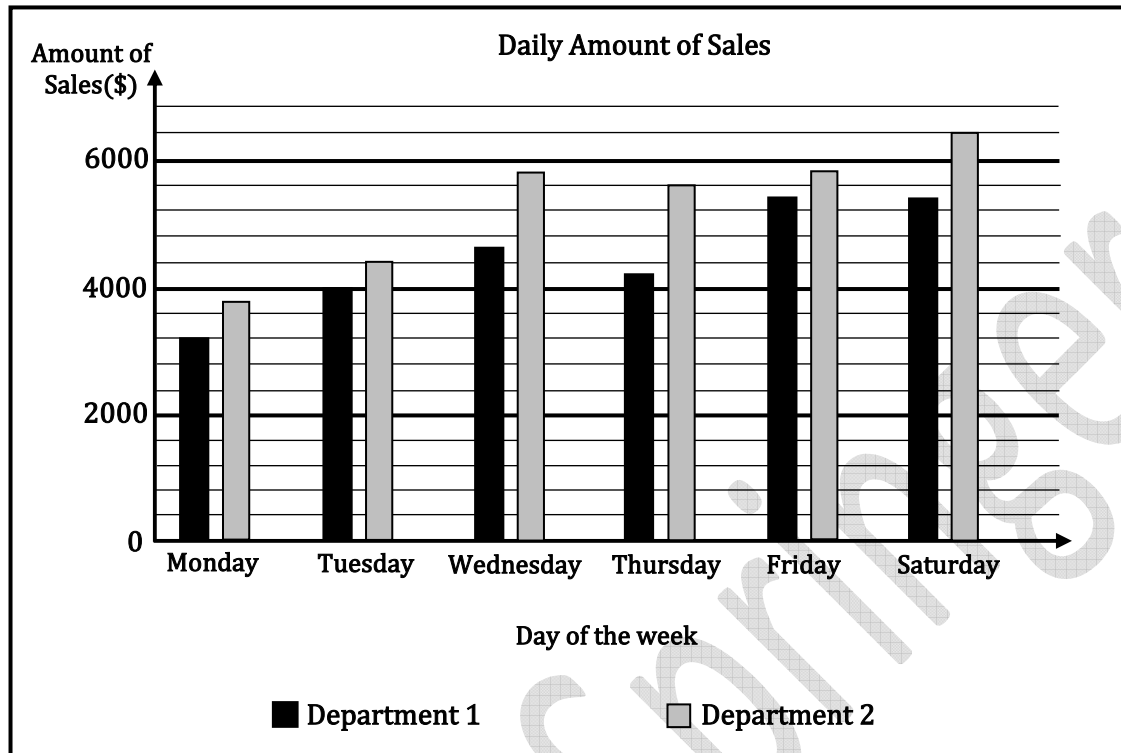
(c) State the position at which the pattern begins repeating for the seventh time.

[2]

1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
1,2,3	4,5,6	7,8,9	10,11,12	13,14,15	16,17,18	19, 20, 21

Answer _____ 19th position _____

40. The bar graph below shows the amount of sales made by two different departments in a store during the course of six days.



(a) What is the **difference** between the amount of sales made by Department 1 and Department 2 on Saturday? [1]

$$\text{Department 1} = \$5400$$

$$\text{Department 2} = \$6400$$

$$\text{Difference} = \$6400 - \$5400$$

$$\text{Difference} = \$1000$$

Answer \$ 1000

- (b) On which days is the difference between the amount of sales made by Department 1 and Department 2 the same? [2]

$$\begin{aligned} \text{Difference on Tuesday} &= \$4400 - \$4000 \\ &= \$400 \end{aligned}$$

$$\begin{aligned} \text{Difference on Friday} &= \$5800 - \$5400 \\ &= \$400 \end{aligned}$$

Answer _____ **Tuesday and Friday** _____

- (c) On which day is the difference between the amount of sales made by Department 1 and Department 2 the largest? [1]

Answer _____ **Thursday** _____

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