THE STUDENT HUB

Sample Exam 5 - Solutions

Session 5 **Total: 75 marks**

SECTION I

1. Arrange these numbers in DESCENDING order (largest first). [1]

   3671 3761 3176 3617

All four numbers have their thousands digit as 3, so we cannot distinguish the largest by looking at the 3.

Looking at the hundreds digit in the order stated, we see, 6, 7, 1, 6. Of these, 7 is the largest, then 6. Hence, 3761 is the largest number and 3176 is the smallest number.

We have 3671 and 3617 and observe that their tens digits are 7 and 1 respectively. Since 7 is larger than 1, 3671 is larger than 3617.

The numbers, in descending order, that is, largest number first will be,

3761, 3671, 3617, 3176

Answer_____3761, 3671, 3617, 3176_____

2. Write the numeral that represents three hundred and thirteen thousand, six hundred and seven. [1]

313000
600
+ 7
313607

Answer_____ 313 607 _____

3. Subtract 3.52 from 7.83 [1]

7.83
− 3.52
4.31

Answer_____ 4. 31 _____

4. Approximate 34 572 to the nearest HUNDRED. [1]

The digit 7 which is the tens digit is the digit in focus.

Since $7 > 5$, then we must round up by adding 1 to the hundreds digit 5, making it 6.

So, 34 572 to the nearest hundred is 34 600.

Answer_____ 34 600 _____

5. $\sqrt{81} - 3 = 10 - \square$ [1]

$\sqrt{81} - 3 = 9 - 3$

$= 6$

Now, $10 - 4 = 6$.

So, $\square = 4$

Answer_____ $\square = 4$ _____

6. Change $4\frac{3}{7}$ to an improper fraction. [1]

Using the algorithm,

$4\frac{3}{7} = \frac{(4\times7)+3}{7}$

$= \frac{28+3}{7}$

$= \frac{31}{7}$

Answer_____ $\frac{31}{7}$ _____

7. Write the next term in the sequence. [1]

2, 6, 18, 54, _____

$2 \xrightarrow{\times 3} 6 \xrightarrow{\times 3} 18 \xrightarrow{\times 3} 54 \xrightarrow{\times 3} 162$

$$\begin{array}{r} 54 \\ \times \quad 3 \\ \hline 162 \end{array}$$

Answer_____ 162 _____

8. What is 40% of 50? [1]

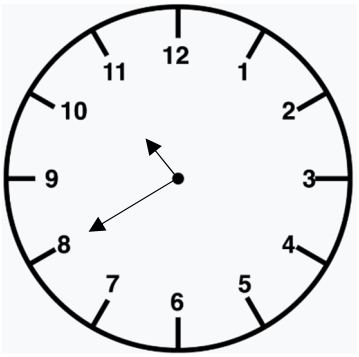
$$40\% \text{ of } 50 = \frac{40}{\cancel{100}_{2}} \times \frac{\cancel{50}^{1}}{1}$$

$$= \frac{40}{2}$$

$$= 20$$

Answer_____ 20 _____

9. A clock is shown below. [1]



Write the time shown in the clock in digital notation.

The hour hand lies between 10 and 11.

The minute hand points to 8.

So, it is 40 minutes past 10.

Hence, the digital notation is 10:40.

Answer_____ 10:40 _____

10. 1 350 m = _____ km [1]

1000 m = 1 km

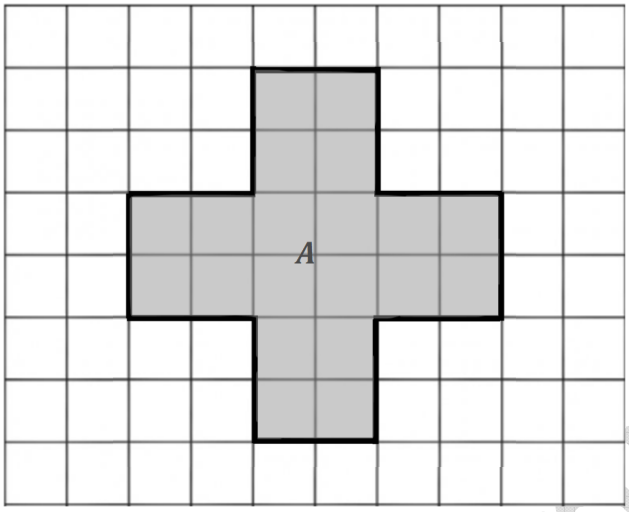
$1\text{ m} = \frac{1}{1000}\text{ km}$

$1350\text{ m} = \frac{1}{1000} \times 1350\text{ km}$

$= 1.35\text{ km}$

Answer_____ 1.35 km _____

11. In the diagram below, each square has an area of 7 cm^2.



Area  $= 7\ cm^2$

Calculate the area of Shape A. [1]

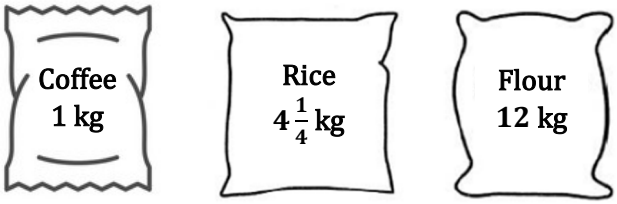
The shape is composed of 20 squares.

So, the area of the shape $= 20 \times 7\ cm^2$

$= 140\ cm^2$

Answer_____ 140 _____ cm^2

12. Sophia bought the items shown below.



Calculate the **total** mass of the items. [1]

$$\begin{array}{r} {\scriptstyle 1} \\ 4\ \frac{1}{4} \\ +\ 1\ 2 \\ \hline 1\ 7\ \frac{1}{4} \\ \hline \end{array}$$

Answer_____ $17\frac{1}{4}$ _____ kg

13. The perimeter of a square is 68 cm.

What is the length of one side of the square? [1]

$$\text{Perimeter} = \text{Length of one side} \times 4$$

$$\text{Length of one side} = \frac{\text{Perimeter}}{4}$$

$$= \frac{68}{4}$$

$$= 17 \text{ cm}$$

Answer_____ 17 _____ cm

14. Alex is making orange juice for a party. For every 1 litre of water, he uses 150 ml of juice mix.

If he uses 5 litres of water, how many ml of juice does he use? [1]

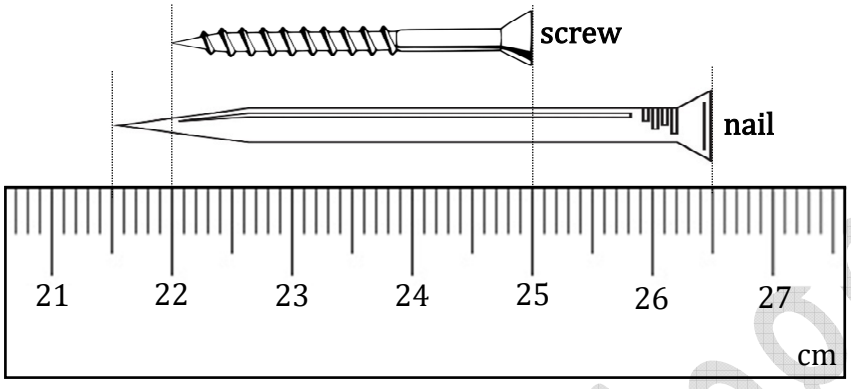
1 litre of water requires 150 ml of juice mix.

So, 5 litres of water will require

$5 \times 150 = 750$ ml of juice mix.

Answer_____ 750 _____ ml

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



What is the **difference** in length between the screw and the nail? [1]

Length of nail = 26.5 − 21.5

= 5 cm

Length of screw = 25 − 22

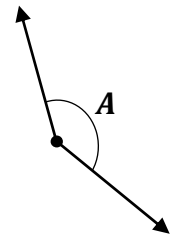
= 3 cm

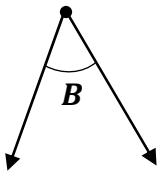
Difference in length between the nail and screw = 5 − 3 cm

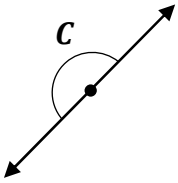
= 2 cm

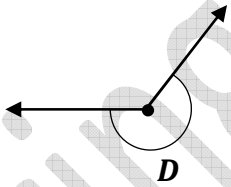
Answer_____ 2 _____ cm

16. Which of the angles below is acute? [1]









A is obtuse.

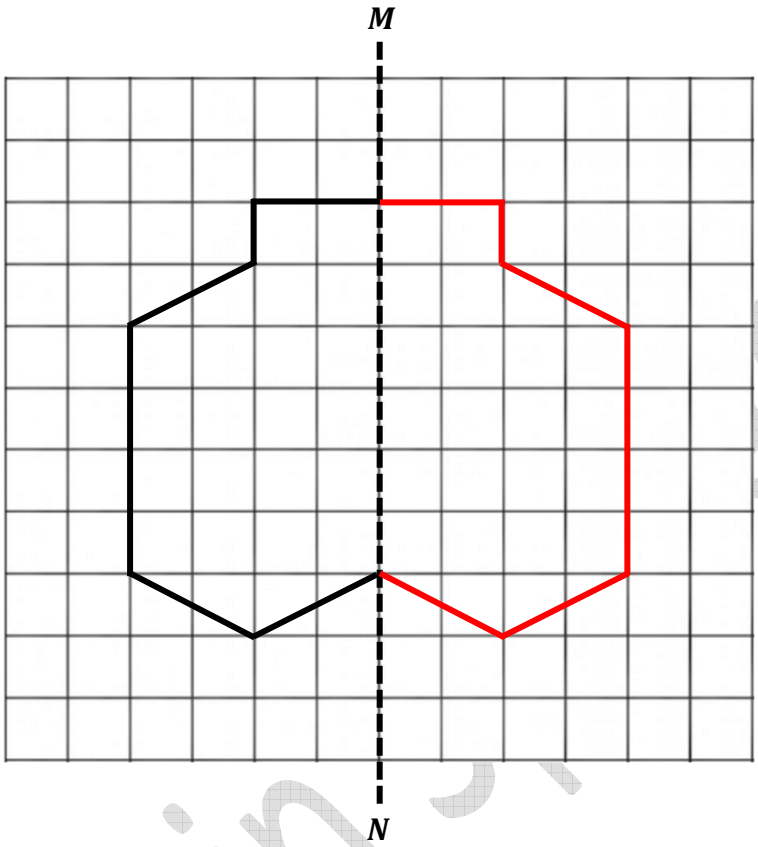
B is acute.

C is straight.

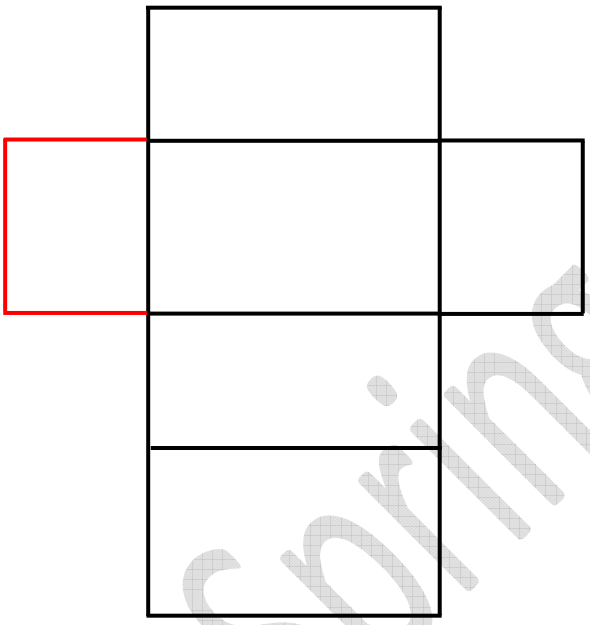
D is reflex.

Answer_____ *B* _____

17. Complete the shape below using MN as the line of symmetry. [1]



18. Complete the drawing below to show the net of a cuboid. [1]



19. The table below shows the apples eaten by 3 students in a class for the week. A total of 26 apples were eaten.

Students	Number of Apples		
Justin			
Carla			
Alison			

How many apples does  represent? [1]

The total number of  $= 6\frac{1}{2}$

So, $6\frac{1}{2}$  represents 26 apples

So, 1  represents $= 26 \div 6\frac{1}{2}$

$= 26 \div \frac{13}{2}$

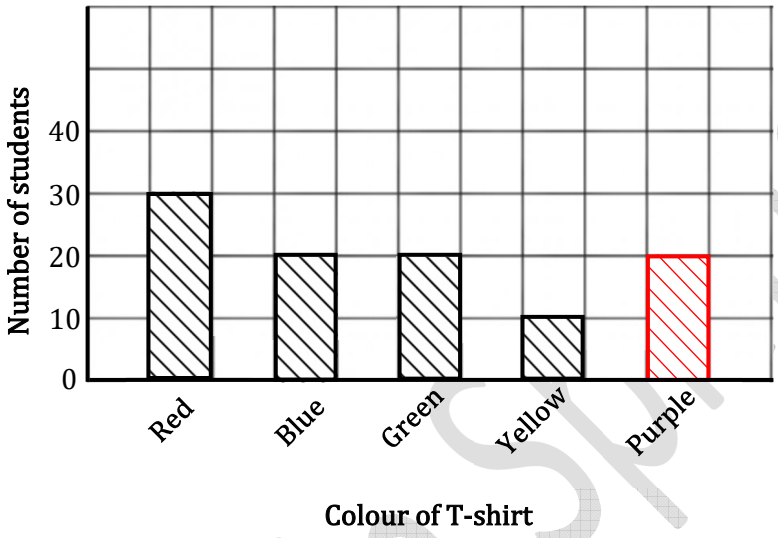
$= \frac{26}{1} \times \frac{2}{13}$

$= 4$

Answer_____ 4 _____ students

20. The incomplete bar graph below show the number of students and the colour of their t-shirts at Sports Day. A total of 100 students were present on Sports Day.

Draw the bar to show the number of students who wore purple T-shirts. [1]



Number of red T-shirts = 30

Number of blue T-shirts = 20

Number of green T-shirts = 20

Number of yellow T-shirts = 10 +

80

So, the number of purple T-shirts = 100 − 80

= 20

SECTION II

21. $4\frac{2}{3} + 2\frac{4}{5} =$ [2]

We have $4 + 2 = 6$.

Now,

$\frac{2}{3} + \frac{4}{5} = \frac{10}{15} + \frac{12}{15}$

$= \frac{10+12}{15}$

$= \frac{22}{15}$

$= 1\frac{7}{15}$

Hence,

$6 + 1\frac{7}{15} = 7\frac{7}{15}$

Answer_____ $7\frac{7}{15}$ _____

22. Two-fifths of a number is 18. What is four-ninths of the number? [2]

$\frac{2}{5}$ of a number is 18.

The number is:

$18 \div \frac{2}{5} = \frac{18}{1} \times \frac{5}{2}$

$= 45$

Now,

$\frac{4}{9}$ of $45 = \frac{4}{9} \times \frac{45}{1}$

$= 20$

Answer_____ 20 _____

23. Circles are numbered in sequence from 1 to 126. Cody is sticking 7 circles in order on one sheet of paper.

(a) How many sheets of paper does Cody need? [1]

$$
\begin{array}{r}
18 \\
7\overline{)126} \\
-\ 70 \\
\hline
56 \\
-\ 56 \\
\hline
0
\end{array}
$$

The number of sheets of paper required = 126 ÷ 7

= 18

Answer_____ 18 _____ sheets of paper

(b) On which sheet of paper will the circle numbered 27 be found? [1]

Each sheet has 7 circles.

1st sheet will have circles 1-7

2nd sheet will have circles 8-14

3rd sheet will have circles 15-21

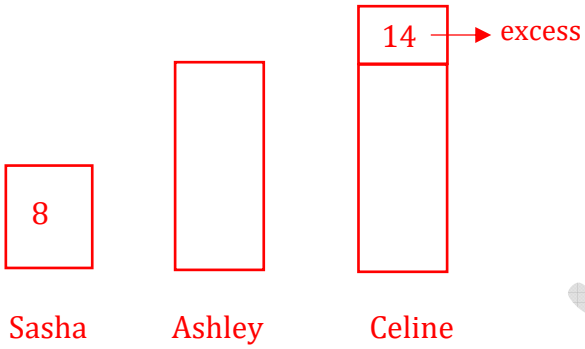
4th sheet will have circles 22-28

Since 27 is between 22-28, the circle numbered 27 will be on the 4th sheet.

Answer_____ 4th sheet _____

24. Sasha has 8 marbles. The sum of Celine's and Ashley's marbles is the square of Sasha's marbles. Celine has 14 marbles more than Ashley.

How many marbles does Ashley have? [2]



Sum of Celine's and Ashley's marbles $= 8^2$

$= 8 \times 8$

$= 64$

Removing the excess $= 64 - 14$

$= 50$

Two boxes $= 50$

One box $= \frac{50}{2}$

$= 25$

∴ Ashley has 25 marbles.

Answer_____ 25 _____ marbles

25. A pattern is formed using dots as shown below.

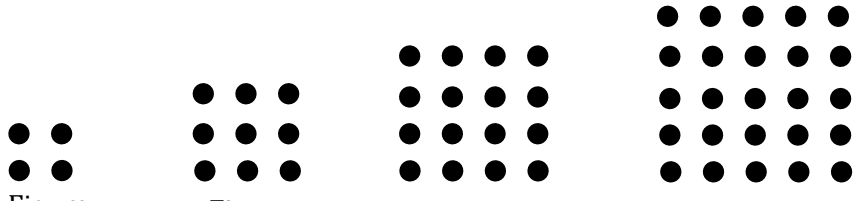


Figure 1 Figure 2 Figure 3 Figure 4

How many dots will form Figure 7? [2]

Figure	Number of Dots
1	4
2	9
3	16
4	25

The pattern is of the form: $(\text{Item Number} + 1)^2$

For Figure 7,

Number of dots $= (7 + 1)^2$

$= (8)^2$

$= 8 \times 8$

$= 64$

Answer_____ 64 _____ dots

26. Anjali shared a bag of chocolates with her friends. She gave $\frac{1}{4}$ to Kim and $\frac{2}{5}$ of the remainder to Peter.

(a) What fraction of the chocolates did Peter get? [1]

Consider the whole as 1.

$\frac{1}{4}$ is given to Kim.

Remainder $= 1 - \frac{1}{4}$

$= \frac{4}{4} - \frac{1}{4}$

$= \frac{3}{4}$

Peter got

$\frac{2}{5}$ of the remainder $= \frac{2}{5} \times \frac{3}{4}$

$= \frac{6}{20}$

$= \frac{3}{10}$

Answer_____ $\frac{3}{10}$ _____

(b) What fraction of the total number of chocolates did Anjali give her friends?[2]

The fraction she gave away $= \frac{1}{4} + \frac{3}{10}$

$= \frac{5}{20} + \frac{6}{20}$

$= \frac{5+6}{20}$

$= \frac{11}{20}$

Answer_____ $\frac{11}{20}$ _____

27. There are 800 seats at a stadium. Of these, 520 are filled.

(a) What percentage of the seats are empty? [1]

Number of seats that are empty $= 800 - 520$

$= 280$ seats

Percentage of seats that are empty $= \frac{280}{800} \times 100$

$= 35\%$

Answer_____ 35 _____ %

(b) If 45% of the seats at the stadium are filled, how many seats are empty? [2]

45% of the 800 $= \frac{45}{100} \times 800$

$= 360$ seats are filled.

Number of seats that are empty $= 800 - 360$

$= 440$

Answer_____ 440 _____ seats

28. A water company's rates are shown below.

Pump 1	0.25 L per minute
Pump 2	0.40 L per minute

Zack filled water from Pump 1 for 20 minutes and then he filled water from Pump 2 for 10 minutes.

What is the **total** amount of water Zack filled? [3]

From Pump 1,

Amount of water filled $= 0.25 \times 20$

$= \frac{1}{4} \times 20$

$= 5$ L

From Pump 2,

Amount of water filled $= 0.40 \times 10$

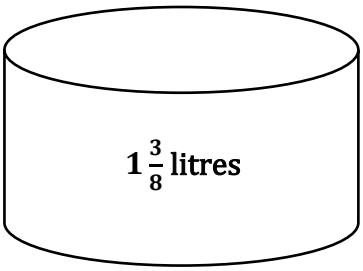
$= 4$ L

Hence, the total amount of water filled $= 5 + 4$

$= 9$ L

Answer_____ 9 _____ L

29. A container and a cup are shown below.



Container

Cup

Jared is filling the container with juice using the cup.

How many cups of juice does he need to fill the container completely? [3]

$1\frac{3}{8}$ litres $= 1\frac{3}{8} \times 1000$ ml

$= 1.375 \times 1000$ ml

$= 1\ 375$ ml

Number of cups required $= \frac{\text{Volume of container}}{\text{Volume of cup}}$

$= \frac{1\ 375}{125}$

$= 11$ cups

Answer_____ 11 _____ cups

30. At an event, 20% of persons are wearing red, $\frac{2}{5}$ are wearing green, 0.3 are wearing blue and the remaining 4 persons are wearing yellow. How many persons are at this event? [3]

Fraction of persons wearing red, green and blue $= \frac{1}{5} + \frac{2}{5} + \frac{3}{10}$

$= \frac{2}{10} + \frac{4}{10} + \frac{3}{10}$

$= \frac{2+4+3}{10}$

$= \frac{9}{10}$

Fraction of persons wearing yellow $= 1 - \frac{9}{10}$

$= \frac{10}{10} - \frac{9}{10}$

$= \frac{1}{10}$

Now,

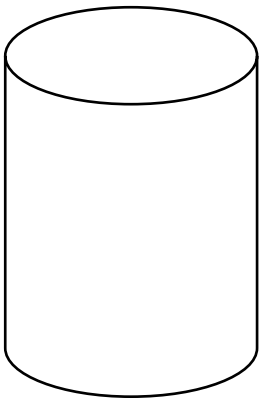
1 part = 4 persons

10 parts = 10×4

= 40 persons

Answer_____ 40 _____ persons

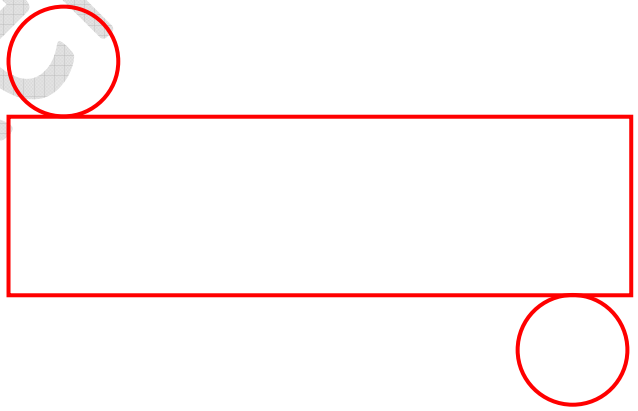
31. (a) Name the solid below. [1]



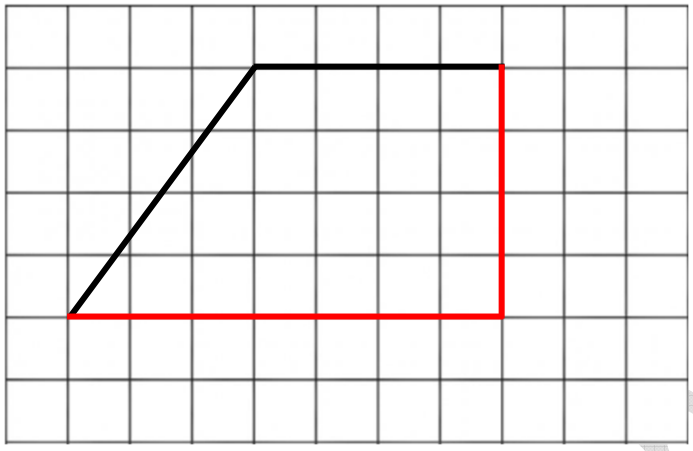
The shape has two flat faces and a curved face. Therefore, it is a cylinder.

Answer_____ cylinder _____

(b) Draw the net of the solid. [1]



32. There is an incomplete quadrilateral on the grid below.



The quadrilateral has only one pair of parallel lines.

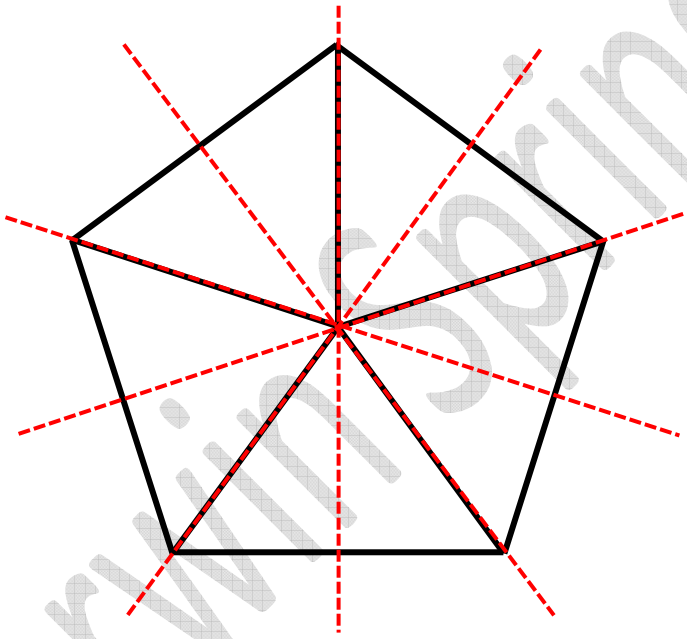
Complete the shape. [2]

33. Tamera has 5 similar triangles. Each triangle has 2 equal sides.

(a) Name the type of triangle that Tamera has. [1]

Answer_____ isosceles triangle _____

(b) Tamera joins the 5 triangles to form the shape below.



Draw two lines of symmetry in the shape above. [1]

(c) Write down the name of the shape. [1]

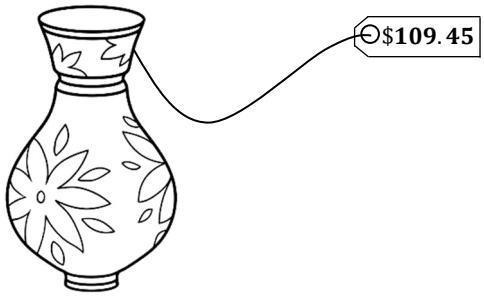
Answer_____ pentagon _____

34. Sharlene has in her pocket:

two $20 notes

three $10 notes

three $5 notes



Sharlene wants to buy the vase shown above. How much more money does she need? [3]

Amount of money Sharlene has $= (2 \times \$20) + (3 \times \$10) + (3 \times 5)$

$= \$40 + \$30 + \$15$

$= \$85$

Amount of more money she needs $= \$109.45 - \$85$

$= \$24.45$

Answer $ _____ 24.45 _____

35. 18 pens were bought at $1.00 each and sold at 2 for $3.00. What is the profit? [2]

Cost of 18 pens @ $1.00 each $= 18 \times \$1.00$

$= \$18.00$

The pens were sold at 2 for $3.00.

Amount of money received for the sale of 18 pens $= \frac{18}{2} \times \$3.00$

$= 9 \times \$3.00$

$= \$27.00$

Hence,

Profit $= \$27.00 - \$18.00$

$= \$9.00$

Answer $ _____ 9.00 _____

36. The tally chart below shows the votes obtained by 4 students for the post of group leader.

Name of Student	Tally	Frequency
Liam	𝍸 𝍸 ||	12
Noah	𝍸 ||||	9
Olivia	|||	3
Elijah	𝍸 ||	7

If 31 students voted, complete the tally and frequency for Noah. [2]

Number of students who voted for Noah $= 31 - (12 + 3 + 7)$

$= 31 - 22$

$= 9$

SECTION III

37. Wanda has 8 kg of flour. She used 1 kg and 450 g to make a batch of muffins and 3 kg 650 g to make some bread.

(a) How much flour did Wanda use altogether? [1]

$$\begin{array}{rr} & 1\ \text{kg}\ 450\ \text{g} \\ + & 3\ \text{kg}\ 650\ \text{g} \\ \hline & 5\ \text{kg}\ 100\ \text{g} \end{array}$$

Answer_____ 5 kg 100 g _____

(b) How much flour does she have remaining? [1]

$$\begin{array}{rr} & 8\ \text{kg}\ 000\ \text{g} \\ - & 5\ \text{kg}\ 100\ \text{g} \\ \hline & 2\ \text{kg}\ 900\ \text{g} \end{array}$$

Answer_____ 2 kg 900 g _____

(c) How many batches of muffins can Wanda make with the remaining flour? [2]

The remaining flour $= 2$ kg 900 g

$= 2\,900$ g

One batch of muffins requires $= 1$ kg 450 g

$= 1\,450$ g

Therefore,

Number of batches of muffins Wanda can make $= \frac{2\,900\text{ g}}{1\,450\text{ g}}$

$= 2$

Answer_____ 2 _____ batches

38. In a fruit stall, only bananas and pears are sold. There are 300 fruits in all and the number of pears is three times the number of bananas.

(a) How many pears are there in the stall? [1]

Number of pears $= \frac{3}{4}$ of fruits

$= \frac{3}{4} \times 300$

$= 225$ pears

Answer_____ 225 _____ pears

(b) $\frac{3}{5}$ of the pears are edible and the others are rotten.

How many pears are rotten? [1]

Fraction of pears that are rotten $= 1 - \frac{3}{5}$

$= \frac{5}{5} - \frac{3}{5}$

$= \frac{2}{5}$

Number of rotten pears $= \frac{2}{5} \times 225$

$= 90$

Answer_____ 90 _____ pears

(c) A box can hold 25 bananas.

How many boxes are needed to pack ALL the bananas? [2]

Number of bananas $= 300 - 225$

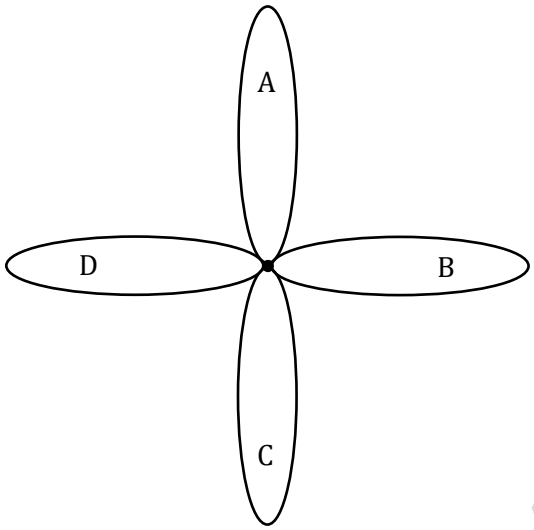
$= 75$

Number of required boxes $= \frac{75}{25}$

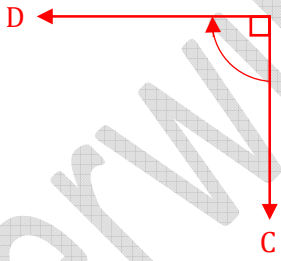
$= 3$ boxes

Answer_____ 3 _____ boxes

39. The diagram below shows the blades of a windmill labelled A, B, C and D.

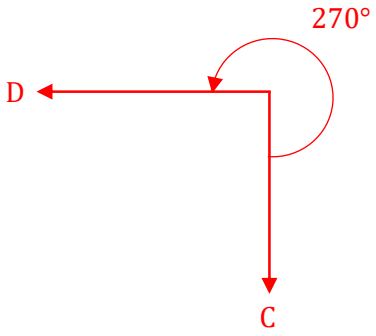


(a) What fraction of a turn does Blade C make if it turns in a clockwise direction to the position of Blade D? [1]



Answer_____ $\frac{1}{4}$ turn _____

(b) How many $\frac{1}{4}$ turns does Blade C make if it turns in an anticlockwise direction to the position of Blade D? [1]

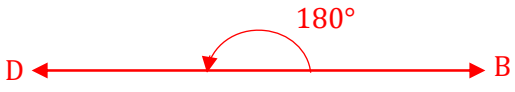


$\frac{270°}{360°} = \frac{3}{4}$

$= 3 \times \frac{1}{4}$

Answer_____ 3 _____

(c) Through how many degrees does Blade B turn in an anti-clockwise direction to the position of Blade D? [1]



Answer_____ 180° _____

(d) If Blade A travels 100 cm in 1 whole turn, how many $\frac{1}{2}$ turns will it take to make 250 cm? [1]

100 cm = 1 whole turn

50 cm = 1 half turn

250 cm = $\frac{250}{50}$

= 5 half turns

Answer_____ 5 _____

40. The table below shows the points obtained by 2 players in 4 rounds.

Round	James	Lucas
1	42	58
2	64	59
3		57
4	37	42
Total	**180**	

(a) Calculate the mean number of points obtained by Lucas. [1]

Total number of points obtained by Lucas = 58 + 59 + 57 + 42

= 216

Mean number of points = $\frac{216}{4}$

= 54 points

Answer_____ 54 _____ points

(b) How many points did James score in Round 3? [1]

Number of points James scored in Rounds 1, 2 and 4 $= 42 + 64 + 37$

$= 143$

Number of points James scored in Round 3 $= 180 - 143$

$= 37$ points

Answer_____ 37 _____ points

(c) A mean of 50 is required to qualify for Round 5. How many MORE points did James need in order to qualify for Round 5? [2]

A mean of 50 in 4 rounds means that the total number of points $= 50 \times 4$

$= 200$

So, James needed $= 200 - 180$

$= 20$ points

Answer_____ 20 _____ points