**Session 7**                                                           **Total: 75 marks**

## SECTION I

1. Write in words:                                                      [1]

| Hundreds of Thousands | Tens of Thousands | Thousand | Hundred | Tens | Ones |
|:---:|:---:|:---:|:---:|:---:|:---:|
| 1 | 1 | 0 | 2 | 0 | 5 |

Answer_____ One hundred and ten thousand, two hundred and five_____

2. Multiply 312 by 6.                                                    [1]

$$
\begin{array}{r}
3\ 1\ 2 \\
\times\quad\quad 6 \\
\hline
1\ 8\ 7\ 2 \\
\hline
\end{array}
$$

Answer_____ 1872 _____

3. Approximate 71 461 to the nearest HUNDRED.                            [1]

The digit 6 which is the tens digit is the digit in focus.

Since 6 > 5, then we must round up by adding 1 to the hundreds digit 4, making it 5.

So, 71 461 to the nearest hundred is 71 500.

Answer_____ 71 500 _____

4. Change $6\frac{5}{8}$ to an improper fraction. [1]

Using the algorithm,

$6\frac{5}{8} = \frac{(6\times 8)+5}{8}$

$= \frac{48+5}{8}$

$= \frac{53}{8}$

Answer_____ $\frac{53}{8}$ _____

5. $6^2 \div 2 = 9 \times \boxed{\phantom{x}}$ [1]

$6^2 \div 2 = (6 \times 6) \div 2$

$= 36 \div 2$

$= 18$

Now,

$18 \div 9 = 2$

Hence, $\boxed{\phantom{x}} = 2$

Answer_____ 2 _____

2

6. $4 - \frac{5}{9} =$ [1]

$4 - \frac{5}{9} = 3 + 1 - \frac{5}{9}$

$= 3 + \frac{9}{9} - \frac{5}{9}$

$= 3 + \frac{4}{9}$

$= 3\frac{4}{9}$

Answer_____ $3\frac{4}{9}$ _____

7. Insert ONE of the following symbols in the box below to make the statement correct. [1]

$> \ = \ <$

0.76     $>$     0.67

8. Write the missing number in the box below to make the statement correct. [1]

$(18 \times 5) + (18 \times 8) = 18 \times \boxed{\phantom{0}}$

$18 \times 5 = 5$ groups of 18

$18 \times 8 = 8$ groups of 18

$(18 \times 5) + (18 \times 8) = 13$ groups of 18

$= 18 \times 13$

$\boxed{\phantom{0}} = 13$

Answer_____ 13 _____

9. Insert the missing numbers in the boxes below. [1]

$$
\begin{array}{r}
3\ \boxed{5}\ 9 \\
-\quad 1\ 2\ \boxed{5} \\
\hline
2\ 3\ 4 \\
\hline
\end{array}
$$

To get the 4 in the ones column, the subtraction of the ones must end in 4.

Subtracting the ones: $9 - \boxed{\phantom{0}} = 4$ , $\boxed{\phantom{0}} = 5$

To get the 3 in the tens column, the subtraction of the tens must end in 3.

Subtracting the tens: $\boxed{\phantom{0}} - 2 = 3$ , $\boxed{\phantom{0}} = 5$

10. 4.55 km = _____ m [1]

1 km = 1000 m

4.55 km = 4.55 × 1000 m

= 4 550 m

Answer_____ 4 550 _____ m

4

11. In the diagram below, the length of each square is 1 cm.
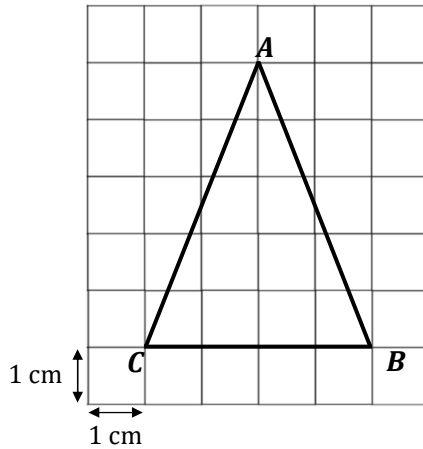


What is the area of triangle $ABC$? [1]

Height = 5 units in height

$= 5 \times 1$

$= 5$ cm in height

Base = 4 units long

$= 4 \times 1$

$= 4$ cm long

Area of triangle $ABC = \frac{Base \times Height}{2}$

$= \frac{4 \times 5}{2}$

$= \frac{20}{2}$

$= 10$ cm$^2$

Answer_____ 10 _____ cm$^2$

12. Lauren is making apple juice for her friends. For every 1 litre of water, she uses 130 ml of juice mix. If she uses 4 litres of water, how many ml of juice does she use? [1]

1 litre of water requires 130 ml of juice mix.

So, 4 litres of water will require

$4 \times 130 = 520$ ml of juice mix.

Answer_____ 520 _____ ml

13. How many oranges of the same mass will balance the scale? [1]



200 g

3 kg
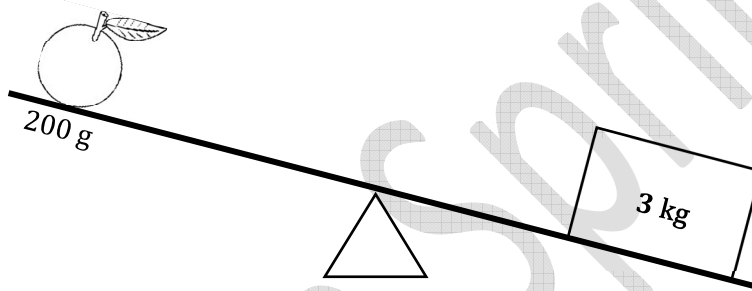
$3 \text{ kg} = 3 \times 1000$

$= 3000 \text{ g}$

To balance the scale, we need $3000 - 200 = 2800$ g on the left side.

$200 \text{ g} = 1$ orange

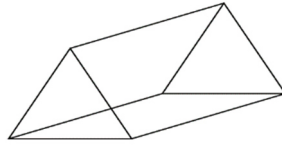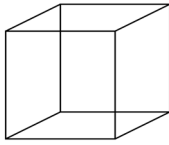$2\,800 \text{ g} = \frac{2800}{200}$

$= 14$ oranges

Answer_____ 14 _____ oranges

14. Which solid below has 2 triangular faces and 3 rectangular faces? [1]
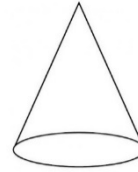


Answer_____ triangular prism _____

15. The perimeter of a square is 104 cm. What is the length of one side of the square? [1]

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

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

$$= \frac{104}{4}$$

$$= 26 \text{ cm}$$

Answer_____ 26 _____ cm

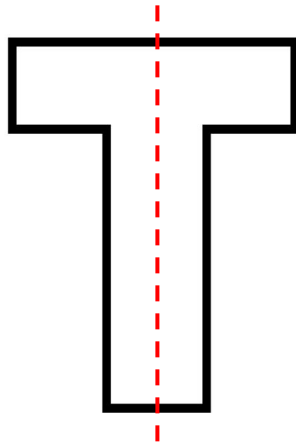16. In the trapezium ABCD shown below, which side is parallel to AD? [1]



In a trapezium one pair of opposite lines is parallel.

Answer_____ BC _____

17. Draw the line of symmetry on the letter below. [1]



18. The table below shows the candy bars eaten by 4 children for the week. A total of 45 candy bars were eaten. [1]

| Students | Number of Candy Bars | | |
|---|---|---|---|
| Laura | ⬤ | ⬤ | ◖ |
| Millie | ⬤ | ◖ | |
| Wanda | ⬤ | ⬤ | |
| Jason | ⬤ | ◖ | |

How many candy bars does ⬤ represent?

The total number of ⬤ $= 7\frac{1}{2}$

So, $7\frac{1}{2}$ ⬤ represents 45 candy bars

So, 1 ⬤ represents $= 45 \div 7\frac{1}{2}$

$$= \frac{45}{1} \times \frac{2}{15}$$

$$= 6$$

Answer_____ 6 _____ candy bars

19. Find the mean of the numbers below. [1]

| 27 | 18 | 30 | 17 |

Sum of numbers $= 27 + 18 + 30 + 17$

$= 92$

There are 4 numbers.

Mean $= \frac{92}{4}$

$= 23$

Answer_____ 23 _____

20. The incomplete bar graph below shows the types of chocolates in a box.

**The Types of Chocolates in a Box**
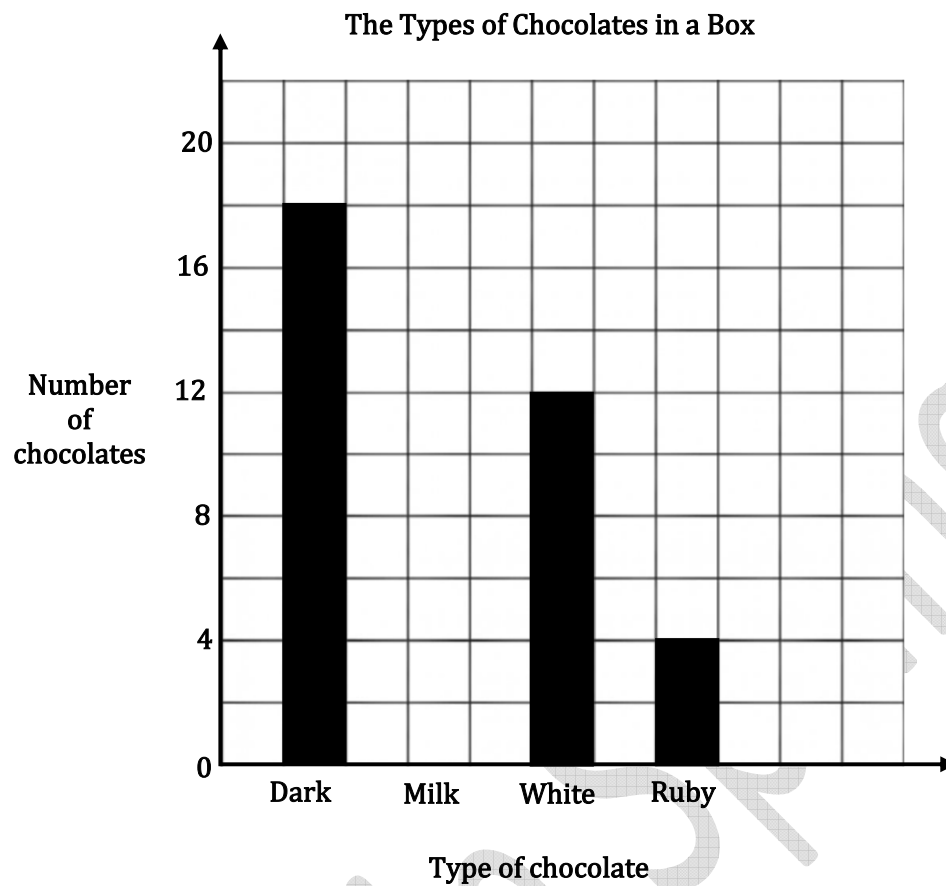


If there are 50 pieces of chocolate in the box, how many of them are milk chocolate? [1]

Number of dark chocolate = 18

Number of white chocolate = 12

Number of ruby chocolate = 4

Number of milk chocolate = 50 − (18 + 12 + 4)

= 50 − 34

= 16

Answer_____ 16 _____ pieces

21. The diagram shows a number line. Point A equals $\frac{2}{7}$ and point B equals $\frac{32}{35}$.

```
A                      M                      B
|──────────────────────|──────────────────────|
2                                             32
─                                             ──
7                                             35
```
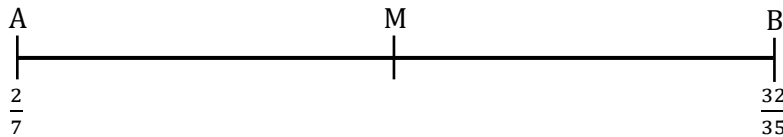
What fraction does point M represent if it is midway between points A and B?          [2]

Distance between A and B $= \frac{32}{35} - \frac{2}{7}$

$$= \frac{32}{35} - \frac{10}{35}$$

$$= \frac{32-10}{35}$$

$$= \frac{22}{35}$$

Halfway $= \frac{22}{35} \div 2$

$$= \frac{22}{35} \times \frac{1}{2}$$

$$= \frac{11}{35}$$

Now,

$M = \frac{2}{7} + \frac{11}{35}$

$$= \frac{10}{35} + \frac{11}{35}$$

$$= \frac{21}{35}$$

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

Answer_____ $\frac{3}{5}$ _____

22. The unshaded fraction of the grid represents 75 bouquets of flowers at the flower shop.     [2]
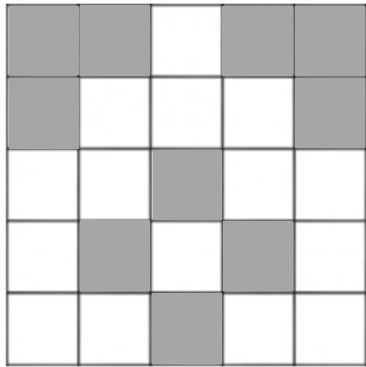


Find the **total** number of flower bouquets at the flower shop.

Number of unshaded squares = 15

15 unshaded squares = 75 bouquets of flowers

1 unshaded square = $\frac{75}{15}$

= 5 bouquets of flowers

25 squares = 25 × 5

= 125 bouquets of flowers

Answer_____ 125 _____ flower bouquets

23. A jar contains 850 decorative beads. Priscilla used 170 of the beads to complete an Art project. What percent of decorative beads is left in the jar? [2]

Number of decorative beads in jar $= 850$ beads

Number of decorative beads used to complete an Art project $= 170$ beads

Number of decorative beads remaining in jar $= 8\ 5\ 0$

$$-\ 1\ 7\ 0$$

$$\underline{\quad 6\ 8\ 0 \quad}$$

Percent of decorative beads left in the jar $= \dfrac{\text{Number of decorative beads remaining in jar}}{\text{Number of decorative beads in jar}} \times 100$

$$= \frac{680}{850} \times 100$$

$$= \frac{4}{5} \times 100$$

$$= 80\%$$

Answer_____ 80 _____ %

24. The total of 83 points was earned by Sophia, Zoe and Caden in an online racing game. Zoe scored 12 points more than Sophia and Caden scored 26 points more than Sophia.

    (a) How many points did Sophia score? [2]

    Total points earned by Sophia, Zoe and Caden $= 84$ points

    Zoe scored 12 points more than Sophia and Caden scored 26 points more than Sophia.

    This is a total of $12 + 26 = 38$ points

    Number of points Sophia scored $= \frac{83-38}{3}$

    $$= \frac{45}{3}$$

    $$= 15 \text{ points}$$

    Answer_____ 15 _____ points

    (b) How many points did Caden score? [1]

    Number of points Caden scored $= 15 + 26$

    $$= 41 \text{ points}$$

    Answer_____ 41 _____ points

25. To sew a dress, a seamstress used 4m 65cm of cloth from a roll containing $11\frac{1}{4}$ m.

A next 3m 20cm is cut off to sew a pair of pants. How much cloth remains?               [2]

$$
\begin{array}{r r r}
11 & m & 2\,5 \; cm \\
-\quad 4 & m & 6\,5 \; cm \\
\hline
6 & m & 6\,0 \; cm \\
\hline
\end{array}
$$

Now,

$$
\begin{array}{r r r}
6 & m & 6\,0 \; cm \\
-\quad 3 & m & 2\,0 \; cm \\
\hline
3 & m & 4\,0 \; cm \\
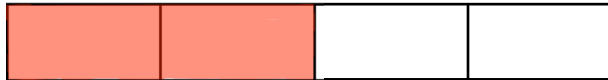\hline
\end{array}
$$

Answer_____ 3 _____ m _____ 40 _____ cm

26. Jalen shaded part of the shape below to represent a fraction.

(a) Shade the shape below to represent the equivalent fraction to Jalen's.    [1]

In the shape above, 4 parts are shaded out of 8.

$\frac{4}{8} = \frac{1}{2}$

Equivalent $= \frac{4 \div 4}{8 \div 4} = \frac{1}{2}$

To represent the equivalent fraction to Jalen's, 2 parts must be shaded out of the 4 parts.

(b) Use the fractions and an explanation to tell how you know that your answer is correct.    [2]

$\frac{4}{8} = \frac{1}{2}$    and    $\frac{2}{4} = \frac{1}{2}$

$\frac{4}{8}$ and $\frac{2}{4}$ are equivalent fractions equal to $\frac{1}{2}$.

Answer_____ $\frac{4}{8}$ and $\frac{2}{4}$ are equivalent fractions equal to $\frac{1}{2}$ _____

27. Tom bought a bike for $600 and then resold it to make a profit of 40%.

What was the selling price of the bike? [2]

Cost of bike before profit = $600

Profit = 40%

$$= \frac{40}{100} \times \$600$$

$$= \frac{2}{5} \times \frac{600}{1}$$

$$= \$240$$

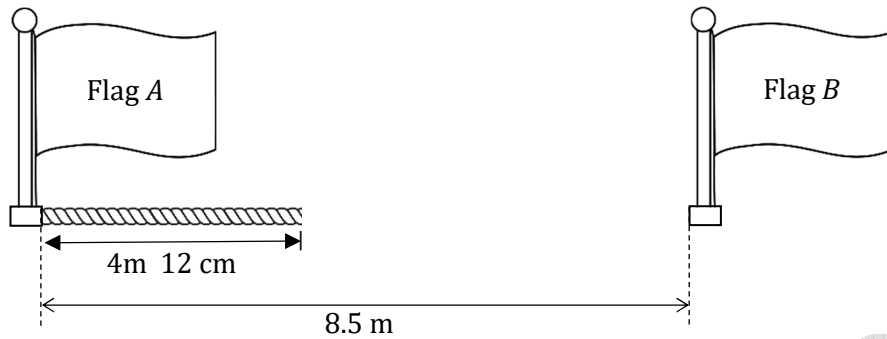Selling price of the bike = $600 + $240

$$= \$840$$

Answer $_____ 840 _____

28. The diagram below shows two flags and a piece of rope.



How much more rope is needed to reach flag B? [2]

Distance between flags = 8.5 m

= 850 cm

Length of rope = 4 m 12 cm

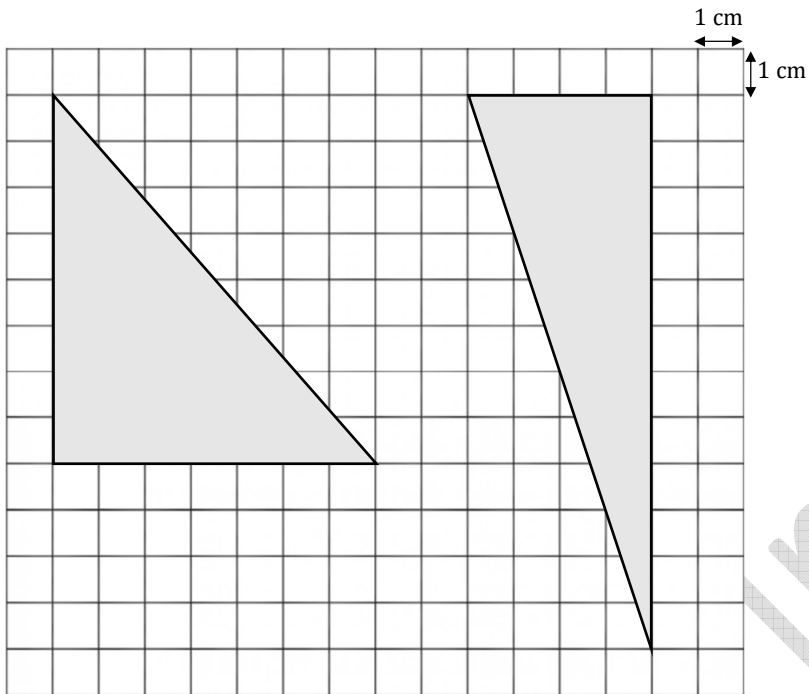So, the additional length of rope needed to reach Pole B is

| m | cm |
|---|---|
| 8 | 50 |
| − 4 | 12 |
| 4 | 38 |

Amount of rope needed = 4 m 38 cm

= 438 cm

Answer_____ 438 _____ cm

29. Two triangles of different sizes are drawn on the 1 cm grid below.

1 cm

1 cm



What is the **difference** in their areas? [3]

Area of first triangle $= \frac{b \times h}{2}$

$= \frac{7 \times 8}{2}$

$= \frac{56}{2}$

$= 28 \; cm^2$

Area of second triangle $= \frac{4 \times 12}{2}$

$= \frac{48}{2}$

$= 24 \; cm^2$

Difference in areas $= 28 - 24$

$= 4 \; cm^2$

Answer_____ 4 _____ cm$^2$

30. The square root of a number is 5 more than the difference of 46 and 27.

What is the number? [2]

Difference $= 46 - 27$

$= 19$

The square root of a number is 5 more than 19.

The square root of the number $= 19 + 5$

$= 24$

Number $= (24)^2$

$= 576$

Answer_____ 576 _____

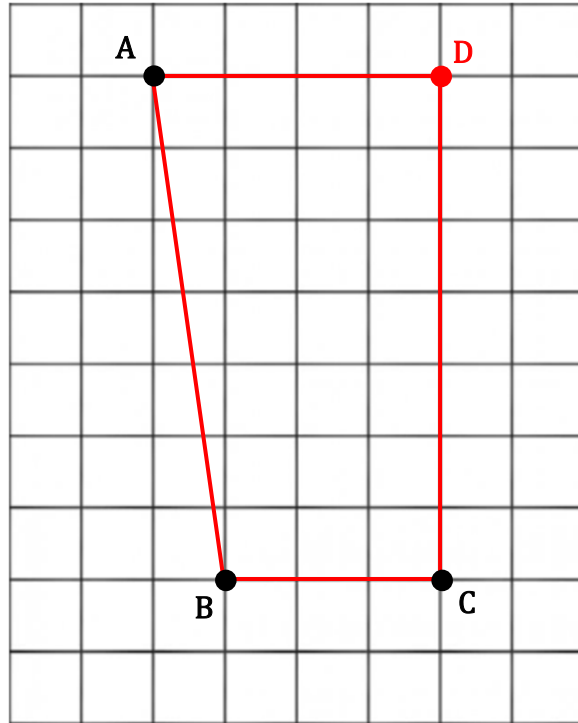31. A solid has 9 edges. A part of the solid is drawn below.
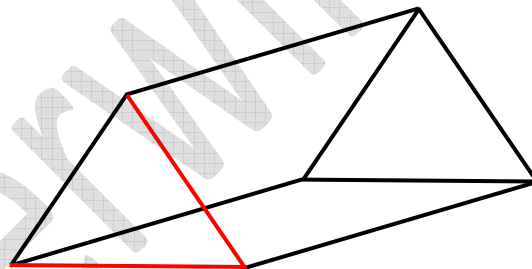


(a) Complete the drawing above. [1]

(b) How many vertices does the solid have? [1]

Answer_____ 6 _____ vertices

32. In the grid provided, indicate the location of point D so that the shape ABCD is a quadrilateral with two right angles. Draw the lines to create the shape ABCD. [2]
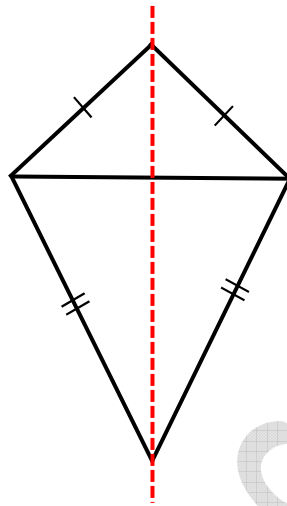
33. Cheryl has a small and a large triangle. There are 2 equal sides in each triangle.

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

Answer_____ isosceles triangle _____

(b) Cheryl joins the 2 triangles to form the shape below.



Draw a line of symmetry in the shape above. [1]

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

Answer_____ kite _____

34. If a watch is set to the correct time at 8:00 a.m. and it gains 6 minutes every hour, what time would it display when the actual time is 3:00 p.m.? [3]

Number of hours between 8:00 am and 3:00 p.m. = 7 hours

Number of minutes = $7 \times 6$

$\quad\quad\quad\quad\quad$ = 42 minutes

$$
\begin{array}{r}
3:0\,0 \\
+\quad\quad 4\,2 \\
\hline
3:4\,2 \\
\hline
\end{array}
$$

Answer_____ 3:42 _____ p.m.

35. A salesperson's average sales per month over the last 4 months is $6 400. He wants to increase his average by $800. How much must he sell in the next month? [3]

The average sales per month over the last four months is $6400.

So, the total number of sales = $6400 × 4

= $25 600

If the salesperson's average is to increase by $800, then it will be $6400 + $800 = $7200.

After 5 months, the total should be $7200 × 5 = $36 000.

In the 5ᵗʰ month, the salesperson must sell $36 000 − $25 600 = $10 400.

Answer $_____ 10 400 _____

36. A container filled with water was weighed. The same container was emptied, filled with sand and weighed again. Finally, the container was weighed with both sand and water. Note that the same amount of sand and water was used each time. The graph below shows the mass of the items.



Mass of Items
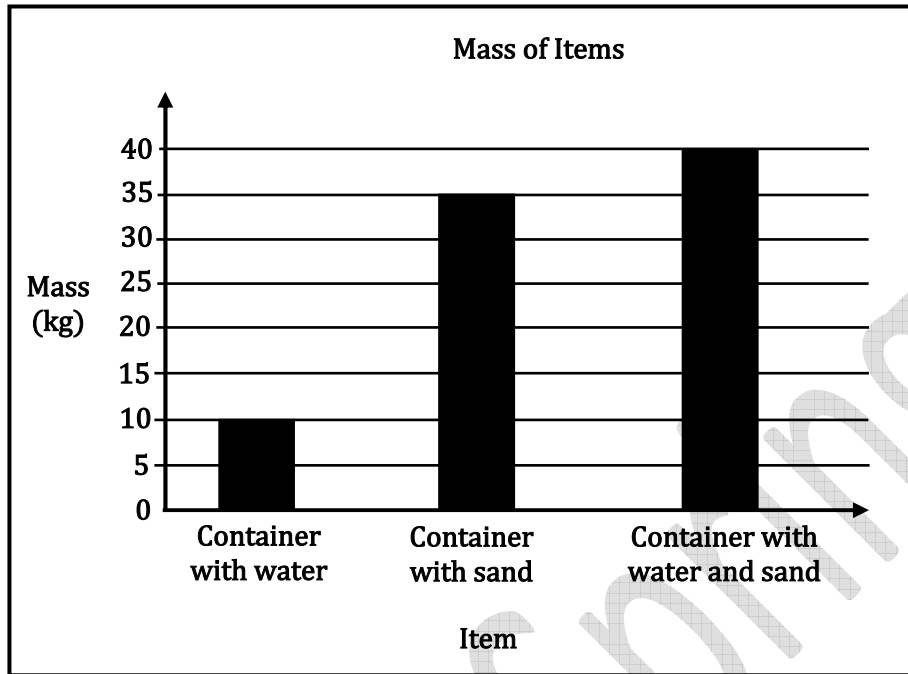
What is the mass of the container?                                                                                    [3]

Container with water + Container with sand = 10 + 35

$$= 45 \text{ kg}$$

Container with water and sand = 40 kg

Hence,

Mass of the container = 45 − 40

$$= 5 \text{ kg}$$

Answer_____ 5 _____ kg

37. A group of artists uses tiles to create mosaic designs on a wall. The pattern is shown below.

| Design Number | Number of Tiles Used |
|---|---|
| 1 | 9 |
| 2 | 14 |
| 3 | 19 |
| 4 | 24 |

(a) What is the pattern rule for the number of tiles used? [1]

For Design Number 1, number of tiles used = 5(1) + 4 = 9.

For Design Number 2, number of tiles used = 5(2) + 4 = 14.

For Design Number 3, number of tiles used = 5(3) + 4 = 19.

For Design Number 4, number of tiles used = 5(4) + 4 = 24.

Answer_____ (5 × Design Number) + 4 _____

(b) Using the same rule, how many tiles will be used to make Design Number 8? [1]

For Design Number 8, number of tiles used = 5(8) + 4

= 40 + 4

= 44 tiles

Answer_____ 44 _____ tiles

(c) For which design number will 64 tiles be used? [1]

$(5 \times \text{Design Number}) + 4 = 64$

$(5 \times \text{Design Number}) = 64 - 4$

$(5 \times \text{Design Number}) = 60$

$\text{Design Number} = \frac{60}{5}$

$\text{Design Number} = 12$

Answer_____ Design Number 12 _____

(d) The group decides to use 113 tiles to make two mosaic designs, with each design being made from more than 50 tiles.

How many tiles will be used for each mosaic design? [1]

The number of tiles used $= 113$

We need to find two numbers, greater than 50, whose sum is 113.

By inspection,

$113 = 54 + 59$

$54 = 5(10) + 4$, so the design number is 10.

$59 = 5(11) + 4$, so the design number is 11.

Answer_____ Design Number 10 using 54 tiles and Design Number 11 using 59 tiles _____

38. Nathan has 19.3 kilograms of metal. He used 4 kg and 550 g to make a lamp and 2 kg 950 g to make a sculpture.

(a) How much metal did Nathan use altogether? [1]

```
    4  kg   5 5 0  g
+   2  kg   9 5 0  g
_____
    7  kg   5 0 0  g
_____
```

Answer_____ 7 _____ kg _____ 500 _____ g

(b) How much metal does he have remaining? [1]

$19.3 \text{ kg} = 19.3 \times 1000$

$= 19\,300 \text{ g}$

```
    19  kg    3 0 0  g
−    7  kg    5 0 0  g
_____
    11  kg    8 0 0  g
_____
```

Answer_____ 11 _____ kg _____ 800 _____ g

(c) How many sculptures can Nathan make with the remaining metal? [2]

The remaining metal $= 11$ kg $800$ g

$= 11\ 800$ g

One sculpture requires $= 2$ kg $950$ g

$= 2\ 950$ g

Therefore,

Number of sculptures Nathan can make $= \dfrac{11\ 800}{2\ 950}$

$= 4$

Answer_____ 4 _____ sculptures

39. A square is drawn on the 2 cm grid below. Six identical circles partially cover the square. Each circle is divided into two equal parts. The area of the shaded fraction shown in the circle is 9.6 cm$^2$.
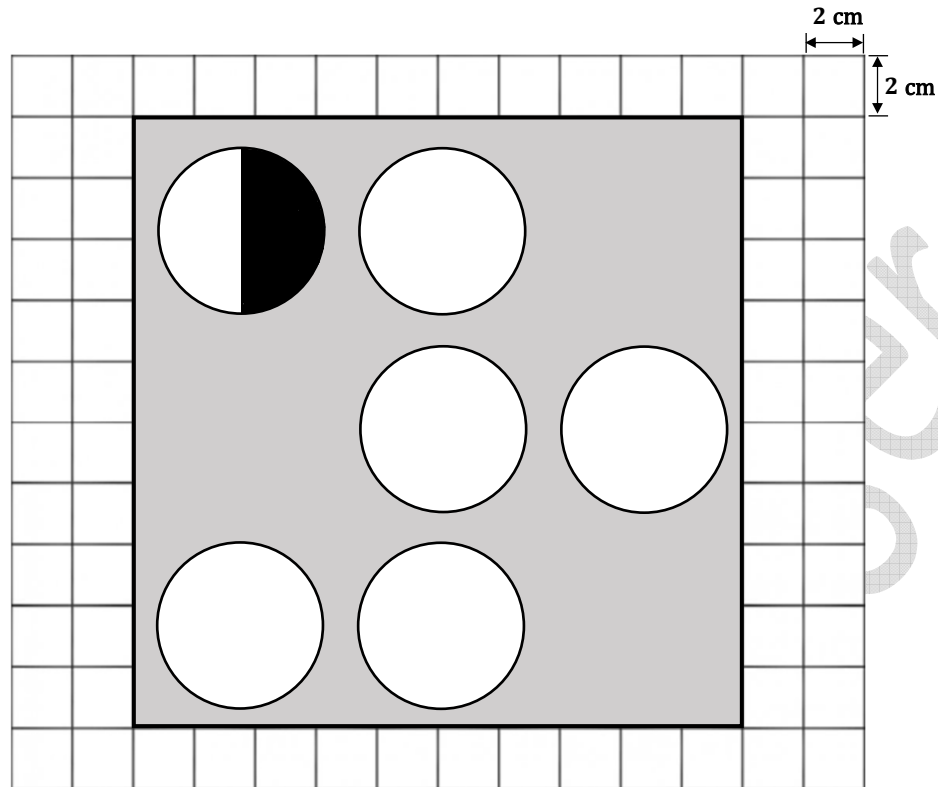


What area of the square is **not** covered by the circles? [4]

Area of square = $s \times s$

$\qquad\qquad$ = 10 blocks × 10 blocks

$\qquad\qquad$ = 20 cm × 20 cm

$\qquad\qquad$ = 400 cm$^2$

Area of 1 circle = 2 × Area of half shaded circle

$\qquad\qquad$ = 2 × 9.6

$\qquad\qquad$ = 19.2 cm$^2$

Area of 6 circles = 19.2 × 6

$\qquad\qquad$ = 115.2 cm$^2$

Therefore,

Area of square not covered by the circles $= 400 - 115.2$

$$= 284.8 \text{ cm}^2$$

Answer_____ 284.8 _____ cm$^2$

40. Sherry has 129 books, Cindy has 117 books and Leandra has 63 books.

How many books must Sherry and Cindy share with Leandra in order for all three girls to have an equal amount of books?                                                                 [4]

Total number of books $= 129 + 117 + 63$

$= 309$ books

To have the same number of books, each girl must have $\frac{309}{3} = 103$ books.

So, Sherry must give $129 - 103 = 26$ books to Leandra and remain with 103 books.

Cindy must give $117 - 103 = 14$ books to Leandra and remain with 103 books.

So, Leandra will then have $63 + 26 + 14 = 103$ books.

Answer_____ Sherry must give 26 books and Cindy must give 14 books. _____