

Sample Exam 12 - Solutions

Session 12

Total: 75 marks

SECTION I

1) Calculate

[1]

$$\begin{array}{r}
 3 \\
 - 4 13 7 5 \\
 8 4 2 \\
 \hline
 3 5 3 3 \\
 \hline
 \end{array}$$

2) Write in words: 32 546

[1]

Answer: Thirty-two thousand, five hundred and forty-six

3) An octopus has 8 tentacles. How many tentacles will 15 octopuses have?

[1]

Number of tentacles on 1 octopus = 8 tentacles

Number of tentacles on 15 octopuses = 15×8

= 120 tentacles

Answer: 120

4) Write 4.67 to the nearest tenth.

[1]

When rounding a number to the nearest tenth, the most important figure that we must look at is the **HUNDREDTHS**. Once that figure is 5 or more, then we round it up to the next tenth. If it is 4 or less, then we round it down to the lower tenth.

Ones	Tenths	Hundredths
4	. 6	7

For the question, the hundredths figure in 4.67 is 7, which is greater than 5. Therefore, we round it up to the next tenth and omit the hundredths digit altogether.

Answer: 4.7

5) What number is represented by

[1]

$$(6 \times 1000) + (7 \times 10) + \left(3 \times \frac{1}{10}\right)?$$

$$(6 \times 1000) + (7 \times 10) + \left(3 \times \frac{1}{10}\right)$$

$$6000 + 70 + 0.3$$

Th	H	T	0	Ths
6	0	0	0.	
		7	0.	
			0.	3
6	0	7	0.	3

Answer: 6070.3

6) Arrange the fractions below in DESCENDING order.
 (begin with the LARGEST)

[1]

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

$$\frac{1}{3}$$

$$\frac{8}{15}$$

The LCM of the given fractions is 15.

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

$$\frac{1}{3}$$

$$\frac{8}{15}$$

$$\frac{3 \times 3}{15}$$

$$\frac{1 \times 5}{15}$$

$$\frac{8 \times 1}{15}$$

$$\frac{9}{15}$$

$$\frac{5}{15}$$

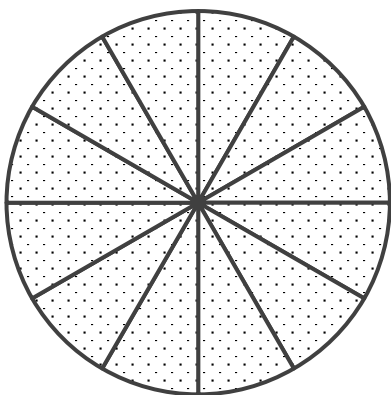
$$\frac{8}{15}$$

Answer: $\frac{3}{5}$, $\frac{8}{15}$, $\frac{1}{3}$

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7) Anna divided a cake into 12 equal slices.

[1]



She gives $\frac{2}{3}$ to her friend. How many slices of cake does Anna give to her friend?

$$\begin{aligned} \frac{2}{3} \text{ of the cake} &= \frac{2}{3} \times 12 \\ &= 8 \text{ slices} \end{aligned}$$

Answer: 8

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8) The whole shape below is divided into the portions shown.

45%	25%	$x\%$	$x\%$	$x\%$
-----	-----	-------	-------	-------

What number does x represent?

[1]

$$\text{Total} = 100\%$$

$$100\% = 45\% + 25\% + x\% + x\% + x\%$$

$$100\% = 70\% + 3x\%$$

$$3x\% = 100\% - 70\%$$

$$3x\% = 30\%$$

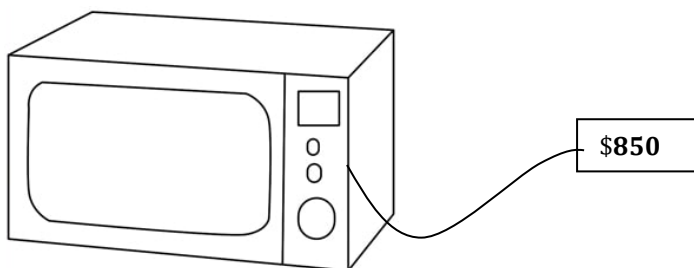
$$x\% = 30\% \div 3$$

$$= 10\%$$

Answer: 10

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9) Mrs. Forde is paying cash for the microwave and receives a 15% discount.



Calculate the amount of the discount.

[1]

Discount is 15% of the cash price of the microwave.

$$\begin{aligned} \text{Discount} &= \frac{15}{100} \times 850 \\ &= \$127.50 \end{aligned}$$

Answer: \$127.50

10) The finishing line banner at a marathon is 4.8 metres long. What is its length in centimetres?

[1]

Using the conversion:

$$1 \text{ m} = 100 \text{ cm}$$

$$\begin{aligned} 4.8 \text{ m} &= 4.8 \times 100 \\ &= 480 \text{ cm} \end{aligned}$$

Answer: 480 centimetres

11) How many quarters (25¢) will Safa get in exchange for a \$10.00 note? [1]

$$\text{\$1.00} = 4 \text{ quarters}$$

$$\text{\$10.00} = 10 \times 4$$

$$= 40 \text{ quarters}$$

Answer: 40

12) Write ONE of the following symbols in the box below to make the number sentence correct. [1]

< = >

$$1.38 + 1.15 \quad \boxed{>} \quad 2.49$$

$$1.38 + 1.15 = 2.53$$

Since 2.53 is greater than 2.49, we use the “>” symbol.

13) Patrick bought the S.E.A Maths Handbook for \$119.95 and later sold it for \$135.50.

How much profit did he make? [1]

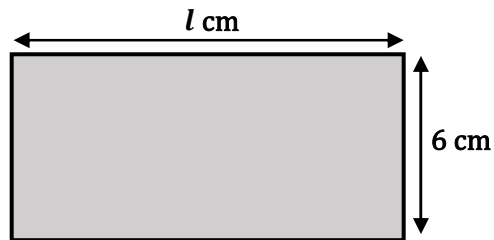
$$\text{Profit} = \text{Selling price} - \text{Cost Price}$$

$$= \text{\$135.50} - \text{\$119.95}$$

$$= \text{\$15.55}$$

Answer: \$15.55

- 14) The width of the rectangular field below is 6 cm. The length, l cm, of the field is twice the width.



Calculate the area of the field.

[1]

$$\text{Width of rectangular field} = 6 \text{ cm}$$

$$\text{Length of rectangular field} = 2 \times \text{Width of rectangular field}$$

$$= 2 \times 6$$

$$= 12 \text{ cm}$$

$$\text{Area of rectangular field} = \text{Length of rectangular field} \times \text{Width of rectangular field}$$

$$= 12 \times 6$$

$$= 72 \text{ cm}^2$$

Answer: 72 cm^2

15) Janaye bought stationery using the 5 bills below. The cost of the stationery was \$90.

Write the missing values on the bills.

[1]

\$20

\$50

\$10

\$5

\$5

Cost of stationery = \$90

Sum of given bills = \$20 + \$50 + \$5

= \$75

Quantity of money still needed = \$90 - \$75

= \$15

The two missing bills must add up to \$15 therefore we can use a \$10 bill and a \$5 bill.

Answer: \$10 and \$5

16) Raynelle is making juice for Christmas lunch. For every 1 litre of water, she uses 500 ml of juice mix.

If she uses 3 litres of water, how many litres of juice mix does she use? [1]

Amount of juice mix 1 litre of water needs = 500 ml juice mix

Amount of juice mix 3 litres of water needs = 3×500

= 1500 ml juice mix

1000 ml = 1 L

Converting ml to L we divide by 1000:

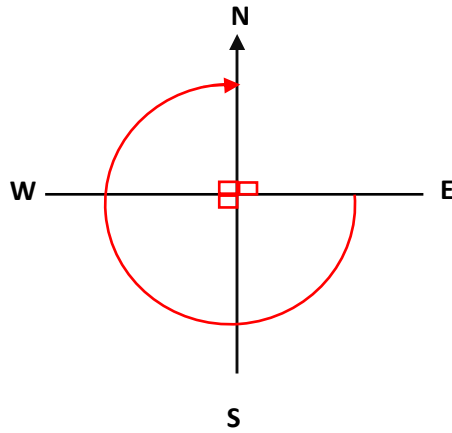
$1500 \div 1000 = 1.5$ L

Answer: 1.5 litres

Dividing by 1000 so we move the decimal point 3 spaces to the left

1.500.
w

- 17) Triston is facing East. He turns CLOCKWISE to face North. Through how many degrees has Triston turned? [1]



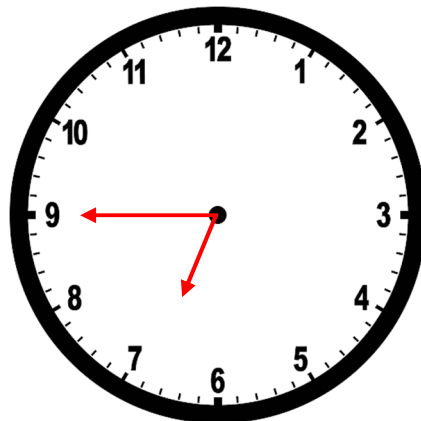
Triston made three $\frac{1}{4}$ turns

$$\frac{1}{4} \text{ turn} = 90^\circ$$

$$\begin{aligned} \frac{3}{4} \text{ turn} &= 3 \times 90^\circ \\ &= 270^\circ \end{aligned}$$

Answer: 270°

- 18) Jediah awoke at quarter to seven. Draw in the hands on the clock below to show the time Jediah awoke. [1]



- 19) The mean of 9, 12 and 15 is the same as the mean of 14 and **a**.
What number does **a** represent?

[1]

$$\begin{aligned}\text{Sum of 9, 12 and 15} &= 9 + 12 + 15 \\ &= 36\end{aligned}$$

$$\begin{aligned}\text{Mean of 9, 12 and 15} &= 36 \div 3 \\ &= 12\end{aligned}$$

$$\text{Mean of 14 and } a = 12$$

$$\begin{aligned}\text{Sum of 14 and } a &= 2 \times 12 \\ &= 24\end{aligned}$$

$$14 + a = 24$$





$$a = 24 - 14$$

$$= 10$$

Answer: 10

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20) The table below shows the number of toys donated by four classes in the charity drive.

Class	Toys Donated
1	
2	
3	
4	

If a total of 84 toys were donated, how many toys does  represent? [1]

Total number of toys = 84

Total number of  in table = $2.5 + 3.5 + 3 + 5$
= 14

Number of toys  represents = $\frac{\text{Total number of toys}}{\text{Total number of } \text{img alt="one full circle" data-bbox="625 615 645 635"/> \text{ in table}}$
= $\frac{84}{14}$
= 6 toys

Answer: 6 toys

SECTION II

21) Calculate:

[2]

$$8\frac{1}{6} \div 2\frac{2}{3}$$

$$8\frac{1}{6} = \frac{49}{6}$$

$$2\frac{2}{3} = \frac{8}{3}$$

$$8\frac{1}{6} \div 2\frac{2}{3} = \frac{49}{6} \div \frac{8}{3}$$

$$= \frac{49}{6} \times \frac{3}{8}$$

$$= \frac{49}{16}$$

Answer: $\frac{49}{16}$

22) Ozil completed 54 practice tests. Shawn completed 16 less than twice as many as Ozil. How many practice tests did they complete ALTOGETHER? [2]

Number of practice tests Ozil completed = 54 tests

Number of practice tests Shawn completed = $(2 \times 54) - 16$
= 92 tests

Number of practice tests completed altogether = $54 + 92$
= 146 practice tests

Answer: 146 tests

23) For every 5 book reports that Selena completes, Brianna completes 7. Brianna eventually completes 56 book reports.

Calculate how many book reports Selena completed.

[2]

Brianna completed 56 book reports.

For every 5 book reports that Selena completes, Brianna completes 7.

$$\begin{aligned}\text{Number of groups of "7" in 56} &= 56 \div 7 \\ &= 8\end{aligned}$$

$$\begin{aligned}\text{Number of book reports Selena completed} &= 5 \times 8 \\ &= 40 \text{ book reports}\end{aligned}$$

Answer: 40 book reports

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24) Mrs. Ali purchased a roll of ribbon for her three daughters. The eldest cut $2\frac{1}{4}$ m of ribbon from the roll, the middle daughter cut a $1\frac{3}{5}$ m piece and the youngest daughter cut a $3\frac{1}{3}$ m long piece of ribbon.

Calculate the difference in length between the shortest and longest pieces of ribbon cut. [2]

Longest piece of ribbon = $3\frac{1}{3}$ m

Shortest piece of ribbon = $1\frac{3}{5}$ m

Difference in length between the shortest and longest pieces of ribbon cut:

$$3\frac{1}{3} - 1\frac{3}{5}$$

Whole Numbers

$$= 3 - 1$$

$$= 2$$

$$= 1$$

Fractions

$$= \frac{1}{3} - \frac{3}{5}$$

$$= \frac{5 - 9}{15}$$

$$= \frac{5}{15} - \frac{9}{15}$$

$$= \frac{15 + 5}{15} - \frac{9}{15}$$

$$= \frac{20}{5} - \frac{9}{15}$$

$$= \frac{11}{15}$$

Answer: $1\frac{11}{15}$ m

25) Thirty-six assignments were given out on a weekly basis by the mathematics teacher over a period of 9 months. Soraya submitted the first 3 assignments and then did not submit the one given the next week. This pattern was repeated throughout the 9 months.

How many assignments did Soraya submit?

[2]

In every 4 weeks Soraya submits 3 assignments and does not submit 1 assignment. She would have repeated this pattern $36 \div 4 = 9$ times in the 9-month period.

$$\begin{aligned} \text{Number of assignments Soraya submitted} &= 3 \times 9 \\ &= 27 \text{ assignments} \end{aligned}$$

Answer: 27 assignments

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26) a) Write in the box below the sign, > or <, that CORRECTLY completes the number sentence. [1]

$$\frac{2}{3} \quad \boxed{>} \quad \frac{4}{7}$$

$$\frac{2}{3} \quad \frac{4}{7}$$

The LCM of the two fractions is 21

$$\frac{2 \times 7}{21} \quad \frac{4 \times 3}{21}$$

$$\frac{14}{21} \quad \frac{12}{21}$$

b) Find the difference between $\frac{2}{3}$ and $\frac{4}{7}$. [1]

$$\begin{aligned} \frac{2}{3} - \frac{4}{7} &= \frac{14}{21} - \frac{12}{21} \\ &= \frac{2}{21} \end{aligned}$$

Answer: $\frac{2}{21}$

27) A cinema has 400 seats. 95% of the seats were occupied for the screening of Batman. If a ticket costs \$45, how much money was collected for the screening? [2]

$$\begin{aligned}\text{Number of occupied seats} &= \frac{95}{100} \times 400 \\ &= 380 \text{ seats}\end{aligned}$$

Cost of 1 ticket is \$45.

$$\begin{aligned}\text{Money collected for the screening} &= \text{Number of occupied seats} \times \text{Cost of 1 ticket} \\ &= 380 \times \$45 \\ &= \$17\,100\end{aligned}$$

Answer: \$17 100

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28) Study the number pattern below.

2	6	12	20	30	42
---	---	----	----	----	----

a) Write in the two missing numbers.

[2]

The next number in the pattern is larger than the number before.

Therefore, the operation/s used is either multiplication or addition.

Since the numbers are not multiples of each other we can eliminate multiplication.

Subtracting the first and second numbers,

$$6 - 2 = 4$$

Subtracting the second and third numbers,

$$12 - 6 = 6$$

We can see that the number being added to each consecutive number in the pattern is increasing by 2.

Fourth number, the number being added to the third number is $6 + 2 = 8$

$$12 + 8 = 20$$

Fifth number, the number being added to the fourth number is $8 + 2 = 10$

$$20 + 10 = 30$$

The two missing numbers in the pattern are: 20 and 30.

b) What is the EIGHTH number in this number pattern?

[1]

Seventh number, the number being added to the sixth number is $12 + 2 = 14$

$$42 + 14 = 56$$

Eighth number, the number being added to the seventh number is $14 + 2 = 16$

$$56 + 16 = 72$$

Answer: 72

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29) Arion bought a game controller for \$750 and sold it to make a profit of 50%. What was the selling price of the game controller? [2]

$$\begin{aligned} 50\% \text{ Profit} &= \frac{50}{100} \times 750 \\ &= \$375 \end{aligned}$$

$$\text{Profit} = \text{Selling Price} - \text{Cost Price}$$

$$\text{Selling Price} = \text{Profit} + \text{Cost Price}$$

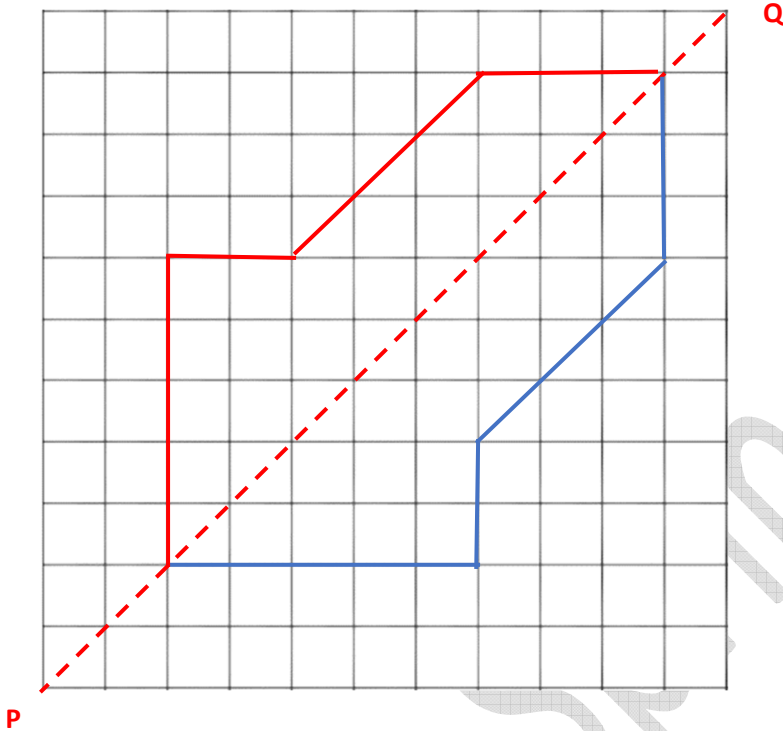
$$= \$375 + \$750$$

$$= \$1125$$

Answer \$1125.00

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30) Complete the shape shown below on the grid below using PQ as the line of symmetry. [3]



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31) After work one evening, Justin took a 20 minutes stroll to the taxi-stand and a 30 minutes ride home. If Justin arrived home at 4:25 p.m., at what time did he leave work? [2]

Time spent strolling to the taxi-stand = 20 minutes

Time taken to commute home = 30 minutes

Total time taken = 20 + 30

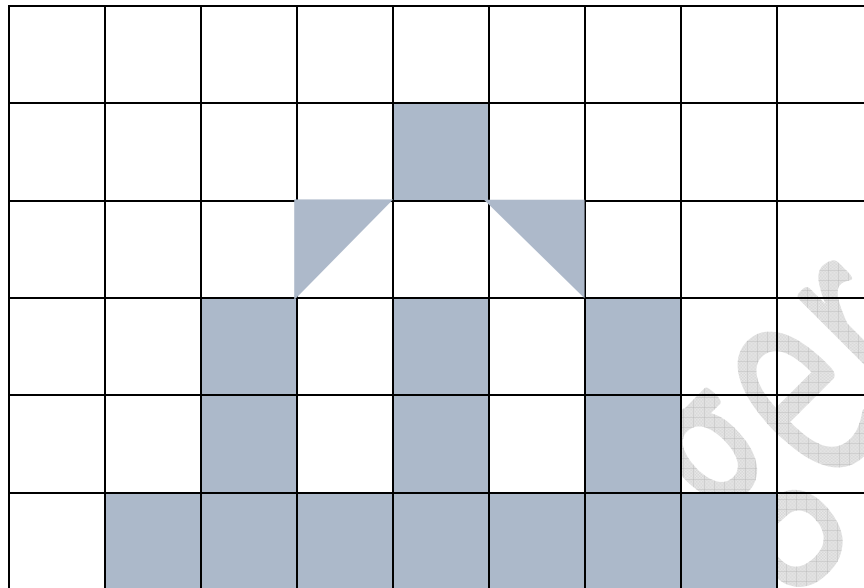
= 50 minutes

We need to subtract 50 minutes from 4:25 p.m. to determine the time Justin left work.

Hours	Minutes
3	85
4	25
-	50
3	35

Answer: 3:35 p.m.

32) The side of each square on the following grid is 3 cm.



Complete EACH of the following statements.

(a) The area of ONE square on the grid is 9 cm². [1]

Side of each square on the grid = 3 cm.

Therefore, the area of one square on the grid = $S \times S$

$$= 3 \times 3$$

$$= 9 \text{ cm}^2$$

(b) The TOTAL shaded area on the grid is 135 cm². [2]

We join two triangles to form a square and count the number of shaded squares in the diagram to find the total shaded area.

Number of shaded squares = 15

Area of one square = 9 cm^2

Area of 15 squares = 15×9

= 135 cm^2

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33) The mean of 6 numbers is 80. Four of the numbers are 90, 74, 67 and 95.

What are the two missing numbers, if one of the missing numbers is 4 more than the other? [3]

$$\begin{aligned} \text{Sum of 6 numbers} &= \text{Mean of 6 numbers} \times 6 \\ &= 80 \times 6 \\ &= 480 \end{aligned}$$

$$\begin{aligned} \text{Sum of 90, 74, 67 and 95} &= 90 + 74 + 67 + 95 \\ &= 326 \end{aligned}$$

$$\begin{aligned} \text{Sum of two missing numbers} &= 480 - 326 \\ &= 154 \end{aligned}$$

Since one number is greater than the other by 4, remove the excess:

$$154 - 4 = 150$$

$$\text{Now, } 150 \div 2 = 75.$$

$$\text{1st missing number} = 75$$

$$\text{2nd missing number} = 75 + 4 = 79$$

Answer: 75 and 79

34) Azzarah bought a large box of fruits (apples and pears) at the market. The total weight of the box was 12 kg 600 g.

a) What was the weight of the pears if the box contained 7 kg 655 g of apples? [1]

$$\begin{array}{r}
 \text{Weight of pears} = \quad \text{kg} \quad \text{g} \\
 \quad \quad \quad \quad \quad 11 \quad 1600 \\
 - \quad 12 \quad 600 \\
 \hline
 \quad \quad \quad \quad 7 \quad 655 \\
 \hline
 \quad \quad \quad 4 \text{ kg} \quad 945 \text{ g} \\
 \hline
 \end{array}$$

Answer: 4 kg 945 g

b) How many pears did the box contain if the weight of one pear is 215 grams? [2]

$$\begin{aligned}
 \text{Number of pears} &= \frac{\text{Total weight of pears}}{\text{Weight of 1 pear}} \\
 &= \frac{4 \text{ kg } 945 \text{ g}}{215 \text{ g}} \\
 &= \frac{4945 \text{ g}}{215 \text{ g}} \\
 &= 23 \text{ pears}
 \end{aligned}$$

Answer: 23 pears

35) Complete the table below with the correct names of solids or plane shapes to match the description given. [3]

Plane Shape/Solid	Description/Properties
Scalene Triangle	Three sides, all of which are unequal.
Cylinder	Three faces, two edges and zero vertices. Has a uniform cross section.
Rectangle	Opposite sides are equal in length and parallel. All angles are right angles.

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- 36) 350 students are to be seated in the school's auditorium for morning assembly. There were 18 rows of chairs with 14 chairs in each row in the auditorium. How many extra rows of chairs are needed to seat all the students? [3]

Total number of students to be seated = 350 students

Number of available seats = Number of rows \times Number of chairs in each row
= 18×14
= 252 seats

Number of seats needed = Total no. of students to be seated - No. of available seats
= $350 - 252$
= 98 seats

Number of extra rows needed = No. of seats needed \div No. of chairs in each row
= $98 \div 14$
= 7 rows

Answer: 7 rows

SECTION III

37) The Standard 5 class sold snack boxes to raise some funds. Each snack box had 2 slices of cake and 3 pies. 140 slices of cakes were used in the snack boxes. The price of one slice of cake is \$4 and the price of one pie is \$3.

(a) Calculate the total number of pies used in the snack boxes. [2]

Number of cake slices used = 140 cake slices

Number of cake slices in one box = 2 cake slices

Number of boxes sold = $140 \div 2$
 = 70 boxes

Number of pies in 1 snack box = 3 pies

Number of pies in 70 snack boxes = 70×3
 = 210 pies

Answer: 210 pies

(b) How much money did the class make by selling all the snack boxes? [2]

$$\text{Price of 1 slice of cake} = \$4$$

$$\begin{aligned}\text{Price of 140 slices of cake} &= 140 \times \$4 \\ &= \$560\end{aligned}$$

$$\text{Price of 1 pie} = \$3$$

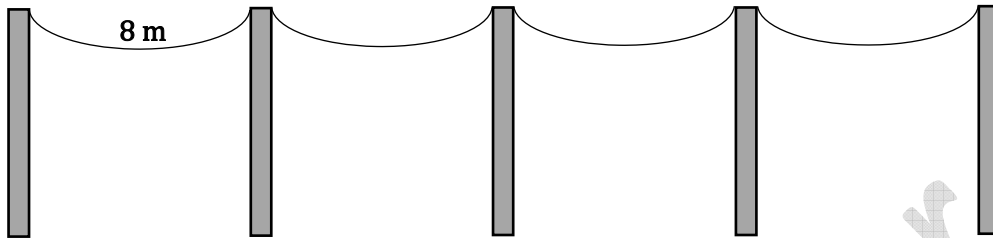
$$\begin{aligned}\text{Price of 210 pies} &= 210 \times \$3 \\ &= \$630\end{aligned}$$

$$\begin{aligned}\text{Total amount of money made by the class} &= \$560 + \$630 \\ &= \$1190\end{aligned}$$

Answer: \$1190

Kerwin Springer

38) Identical poles are placed on a straight line at an equal distance from each other, as shown below to support the wire.



(a) If we have 168 m of wire, how many poles will we need? [1]

$$\begin{aligned} \text{Number of spaces} &= 168 \div 8 \\ &= 21 \text{ spaces} \end{aligned}$$

$$\begin{aligned} \text{Number of poles needed} &= \text{Number of spaces} + 1 \\ &= 21 + 1 \\ &= 22 \text{ poles} \end{aligned}$$

Answer: 22 poles

- (b) If the width of each pole is 1.5 m, what is the distance from the 1st pole to the last pole needed to support the wire? [3]

$$\begin{aligned}\text{Distance from the 1}^{\text{st}} \text{ pole to the 22}^{\text{nd}} \text{ pole} &= \text{Length of wire} + \text{Width of 22 poles} \\ &= 168 + (22 \times 1.5) \\ &= 168 + 33 \\ &= 201 \text{ m}\end{aligned}$$

Answer: 201 m

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39) There were 450 people at an amusement park. Of these, were $\frac{1}{3}$ adults (men and women) and the others were children (boys and girls).

There were twice as many girls as boys.

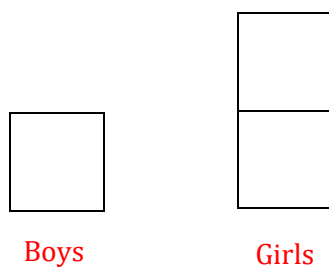
The number of women was equal to half the number of boys.

How many men were at the amusement park?

[4]

$$\begin{aligned} \text{Number of adults (men and women)} &= \frac{1}{3} \times 450 \\ &= 150 \end{aligned}$$

$$\begin{aligned} \text{Number of children} &= 450 - 150 \\ &= 300 \end{aligned}$$



Total = 300 children

3 blocks = 300 children

$$\begin{aligned} 1 \text{ block} &= \frac{300}{3} \\ &= 100 \text{ children} \end{aligned}$$

$$\text{Number of boys} = 100 \text{ boys}$$

$$\begin{aligned} \text{Number of women} &= \frac{1}{2} \times \text{Number of boys} \\ &= \frac{1}{2} \times 100 \\ &= 50 \text{ women} \end{aligned}$$

$$\text{Number of adults} = 150$$

$$\text{Number of men} + \text{Number of women} = 150$$

$$\begin{aligned} \text{Number of men} &= 150 - \text{Number of women} \\ &= 150 - 50 \\ &= 100 \text{ men} \end{aligned}$$

Answer: 100 men

40) 120 students chose their favourite sport. $\frac{1}{3}$ preferred football, $\frac{5}{12}$ cricket, $\frac{1}{6}$ tennis and the rest preferred track and field.

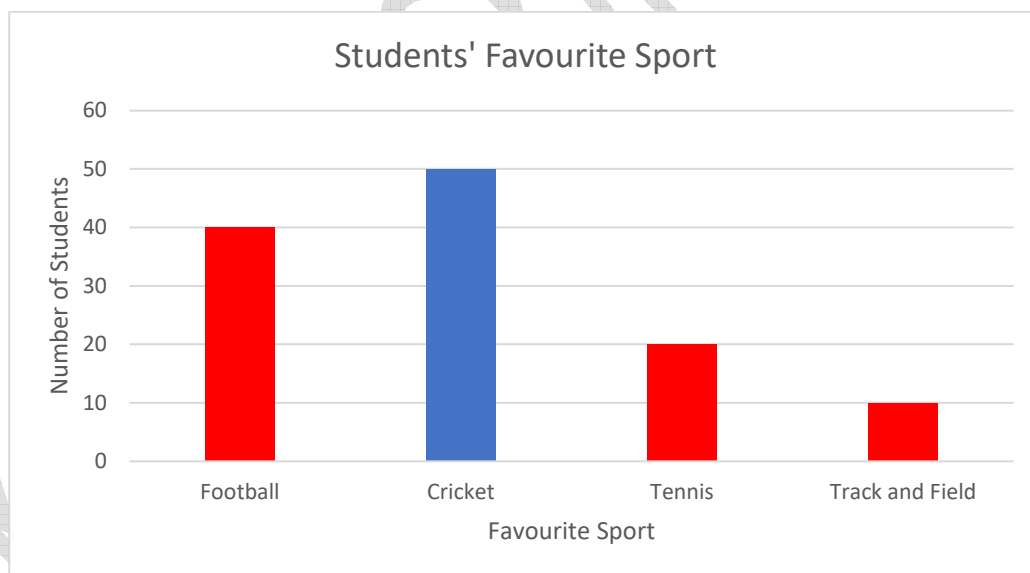
(a) Draw the missing bars to complete the chart below. Show working to support your answer. [2]

Total number of students = 120 students

Students who prefer football = $\frac{1}{3} \times 120 = 40$ students

Students who prefer tennis = $\frac{1}{6} \times 120 = 20$ students

Students who prefer Track and Field = $120 - (40 + 50 + 20)$
 $= 120 - 110$
 $= 10$ students



(b) Which two sports together represent 50% of the students?

[2]

$$\begin{aligned} 50\% \text{ of the students} &= \frac{50}{100} \times 120 \\ &= 60 \text{ students} \end{aligned}$$

Looking at the Bar Graph:

$$\text{Football} + \text{Tennis} = 40 + 20 = 60 \text{ students}$$

$$\text{Cricket} + \text{Track and Field} = 50 + 10 = 60 \text{ students}$$

Answer: Football and Tennis OR Cricket and Track and Field

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