

Word Problem Worksheet  
& Solutions  
Catholic High Paper  
P6 Mathematics SA1 2018

Show your working clearly in the space provided for each question and write your answers in the spaces provided. Questions can be found at the end of the worksheet.

6. a)

$$\text{Number of } \frac{3}{10} \text{ m pieces} = \frac{4}{5} \div \frac{3}{10} = \frac{4}{5} \times \frac{10}{3} = \frac{8}{3} = 2 \text{ remainder } \frac{2}{3}$$

$$= 2 \text{ pieces}$$

b)

$$\text{Length of leftover} = \frac{4}{5} - \frac{3}{10} \times 2 = \frac{8}{10} - \frac{6}{10} = \frac{2}{10} = \frac{1}{5} \text{ m}$$

Ans: (a) 2

(b)  $\frac{1}{5}$  m

7. a)

Total number of books read by the class =  $30y$

b)

Number of books read by group in ink blot =  $30y - 14y = 16y$

Number covered by ink blot =  $16y \div 6 = \frac{8}{3}y$

Ans:  $\frac{8}{3}y$

8. Total length =  $220 \times 30 = 6600 \text{ cm} = 66\text{m}$

Least number of rolls =  $66 \div 20 = 3 \text{ remainder } 6\text{cm} \approx 4$

Ans: 4

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9. Ratio of time Mrs Tan took vs time Mrs Lee took  $\rightarrow 25 : 40$   
Ratio of number Mrs Tan made vs number Mrs Lee made  $\rightarrow 40 : 25$   
 $\rightarrow 8 : 5 \rightarrow 32u : 20u$

Where  $32u - 20u = 12u = 12$

$u = 1$

Number of dumplings Mrs Lee make in one minute =  $20u = 20$

Ans: 20

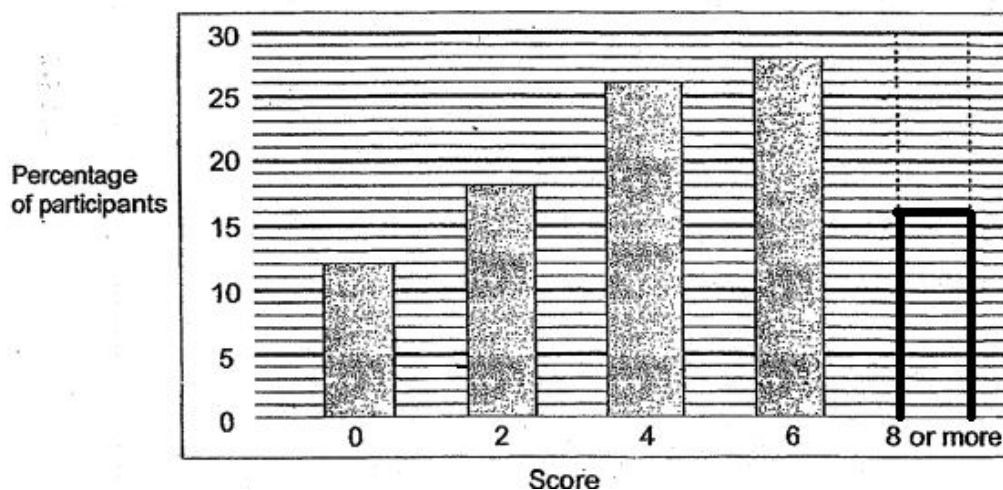
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10. Let length of respective rhombuses =  $a, b, c$   
Perimeter of 3 rhombuses =  $4 \times (a + b + c) = 60$   
 $(a + b + c) = 60 \div 4 = 15$

Perimeter each rhombus & equilateral set of 5 side each  
 $= 5 \times (a + b + c) = 5 \times 15 = 75$

Ans: 75 cm

11. a)  
 $30\% \rightarrow 12\% \text{ of } 0 \text{ score} + 18\% \text{ of } 2 \text{ score}$   
Therefore lowest score to qualify = 4
- b)  
Percentage who obtained 8 or more =  $24 \div 150 = 16\%$



Ans: (a) 4  
(b) 16%

12.  $\angle PQR = 32^\circ$   
 $\angle PRQ = (180 - 32) \div 2 = 74^\circ$  (isosceles triangle)  
 $\angle PRS = 180 - 57 = 123^\circ$   
 $\angle SRQ = 360 - \angle PRQ - \angle PRS = 360 - 74 - 123 = 163^\circ$

Ans:  $163^\circ$

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13. a)  
Amount paid for musical box =  $(600 - 120) \div 2 = \$240$   
b)  
Discount for musical box =  $20 \div 80 \times 240 = \$60$   
Discount for watch =  $140 - 60 = \$80$   
Discounted price of watch =  $600 - 240 = \$360$   
Percent discount for watch =  $80 \div (80 + 360) \times 100 = 18.18\% \approx 18.2\%$

Ans: (a) \$240  
(b) 18.2%

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14. Let total number of cards =  $u$

$$\text{At the end 10 days number of cards he collected} = \frac{5}{23} \times 2 \times u = \frac{10}{23} u$$

$$\text{Original number of cards} = \frac{23}{23} u - \frac{10}{23} u = \frac{13}{23} u = 208$$

$$u = 208 \times \frac{23}{13} = 368$$

$$\text{Number of cards collected in 5 days} = \frac{5}{23} u = \frac{5}{23} \times 368 = 80$$

Ans: 80

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15. Let number of red pens at first =  $5u$

Blue pens at first =  $6u$

$$\text{Number of blue pens at last} = 6u - 24$$

$$\text{Number of red pens at last} = \frac{1}{6} \times (6u - 24) = u - 4$$

$$\text{Difference between red pens at first and at end} = 5u - (u - 4) = 52$$

$$4u + 4 = 52$$

$$4u = 52 - 4 = 48$$

$$u = 48 \div 4 = 12$$

$$\text{Number of blue pens at the end} = 6u - 24 = 6 \times 12 - 24 = 48$$

Ans: 48

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16. a)

$$\text{Area of semi-circle} = \frac{1}{2} \times \frac{22}{7} \times 7 \times 7 = 77 \text{ cm}^2$$

$$\text{Area of ABCD} = 3 \times 77 = 231 \text{ cm}^2$$

$$\text{CD} = 231 \div 7 = 33 \text{ cm}$$

b)

$$\text{Perimeter of semi-circle} = \frac{1}{2} \times \frac{22}{7} \times 2 \times 7 = 22 \text{ cm}$$

$$\begin{aligned} \text{Perimeter of rectangle minus intersection with circle} \\ = 7 + 7 + 33 + 33 - 14 = 66 \text{ cm} \end{aligned}$$

$$\text{Perimeter of figure} = 22 + 66 = 88 \text{ cm}$$

Ans: (a) 33 cm

(b) 88 cm

17. a)

Odd figures, number of sticks increment by 3 from previous

Even figures, number of sticks increment by 6 from previous

$$\text{Number of sticks in figure 6} = 22 + 6 = 28$$

$$\text{Number of squares in figure } n = n + \frac{n}{2} \quad (\text{whole numbers only})$$

$$\text{Number of squares in figure 6} = 6 + 3 = 9$$

b)

$$\text{Number of squares in figure 50} = 50 + \frac{50}{2} = 75$$

c)

$$\text{Number of sticks for odd figures} = 4 + \frac{n-1}{2} \times 9 = 4 + \frac{100}{2} \times 9 = 454$$

Ans: (a) 28, 9

(b) 75

(c) 454

For questions 6 to 17, show your working clearly in the space provided for each question and write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part-question (45 marks)

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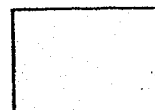
6. Jack had a piece of rope  $\frac{4}{5}$  m long. She cut it into  $\frac{3}{10}$  m pieces.

(a) How many  $\frac{3}{10}$  m pieces of rope were there at most?

(b) What was the length of the piece of rope left over?

Ans: (a) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [2]






7.

The table below shows the number of books read by each pupil in a class of 30 pupils. One of the numbers in the table is covered by an ink blot.

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Number of books read by each pupil	0	$y$	
Number of pupils	10	14	6

The average number of books read by the pupils in the class is  $y$ .

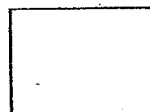
(a) Find the total number books read by the class.

(b) What is the number covered by the ink blot?

Leave your answer in terms of  $y$  for (a) and (b).

Ans: (a) \_\_\_\_\_ [1]

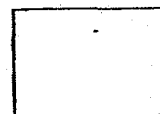
(b) \_\_\_\_\_ [2]



8. Mr Sim needs 220 pieces of string, each of length 30 cm, to tie parcels. String is sold in rolls of 20 m each. What is the least number of rolls of string that Mr Sim needs to buy?

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Ans: \_\_\_\_\_ [3]

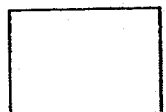


9.

Mrs Tan took 25 minutes while Mrs Lee took 40 minutes to make the same number of dumplings. Mrs Tan made 12 more dumplings in one minute than Mrs Lee. How many dumplings did Mrs Lee make in one minute?

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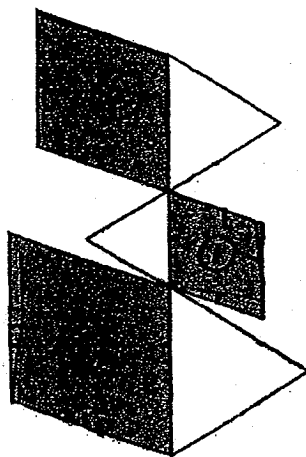
Ans: \_\_\_\_\_ [3]



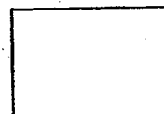
10.

The figure below is formed using 3 rhombuses and 3 equilateral triangles. The perimeter of the shaded rhombuses is 60 cm. What is the perimeter of the figure?

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Ans: \_\_\_\_\_ [3]

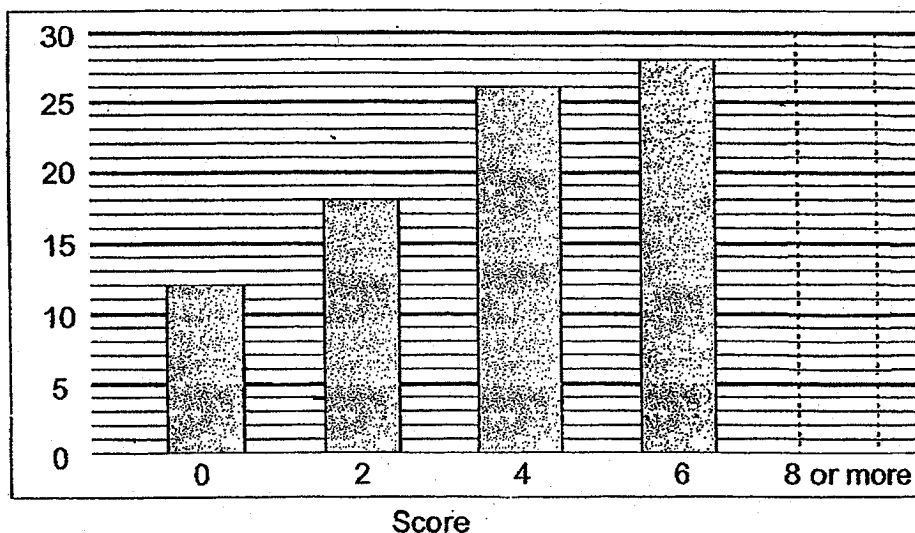


11.

Participants of a competition must obtain a certain score in the first round to qualify for the second round. The table shows the number of participants for each score in the first round. The lowest score is 0. There were 150 participants in the first round.

Score	Number of Participants
0	18
2	27
4	39
6	42
8 or more	24

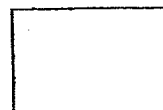
Percentage  
of participants



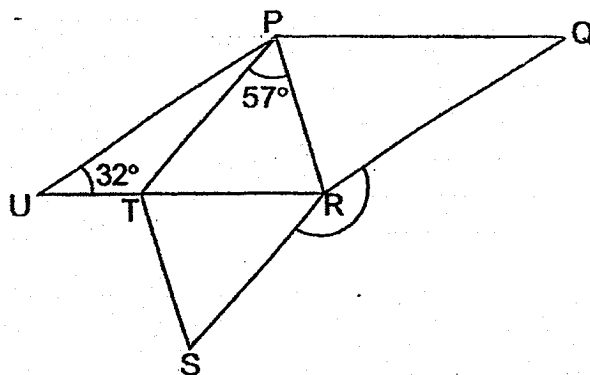
- (a) 30% of the participants did not qualify for the second round. From the table, what was the lowest score of a participant who qualified for the second round?
- (b) What percentage of the participants obtained a score of '8 or more'? Draw the bar for the percentage of participants who obtained a score of '8 or more' in the graph above. [2]

Ans: (a) \_\_\_\_\_ [2]

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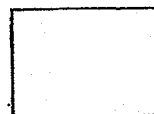


12. In the figure,  $PQRU$  is a rhombus and  $PRST$  is a parallelogram.  
 $\angle TPR = 57^\circ$  and  $\angle RUP = 32^\circ$ . Find  $\angle SRQ$ .



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Ans: \_\_\_\_\_ [4]



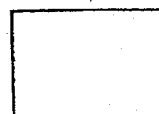
13. Cindy bought a musical box and a watch at a discount. 20% discount was given to the musical box and the total discount given for both items was \$140. She paid a total of \$600 and paid \$120 more for the watch than the musical box.

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- (a) How much did she pay for the musical box?
- (b) What was the percentage discount given for the watch?  
Round the answer to 1 decimal place.

Ans: (a) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [3]



14. Alan was given a total of 208 game cards. He wanted more cards so he bought the same number of cards each day for the next 10 days. At the end of the fifth day, he had bought  $\frac{5}{23}$  of the total number of cards. How many game cards did he collect in the 5 days?

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Ans: \_\_\_\_\_ [4]





15. The number of blue pens that Mrs Li had was  $\frac{6}{5}$  of the number of red pens. Her son took 52 red pens and 24 blue pens from her. After that, the number of red pens became  $\frac{1}{6}$  of the number of blue pens. How many blue pens did Mrs Li have in the end?

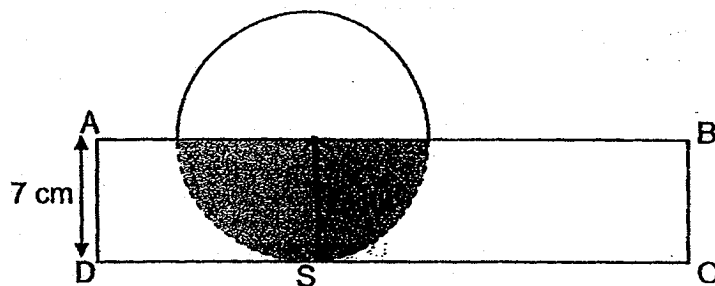
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Ans: \_\_\_\_\_ [4]



16. In the figure below, rectangle ABCD overlaps a circle with AB passing through the centre of the circle and DC touching a point, S, on the circumference of the circle. The area of the shaded part is  $\frac{1}{3}$  of the area of the rectangle.

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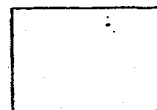


- (a) Find the length of CD.  
(b) Find the perimeter of the figure.

Take  $\pi = \frac{22}{7}$ .

Ans: (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [3]



17. Sticks of the same length are used to form figures that follow a pattern. The first five figures are shown below.

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Figure 1

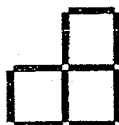


Figure 2



Figure 3

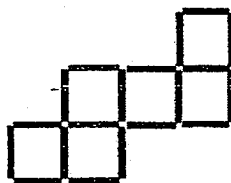


Figure 4

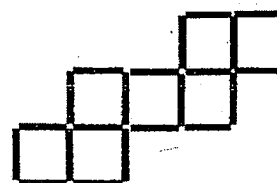


Figure 5

The table below shows the number of sticks used for each figure and the number of squares formed in each figure.

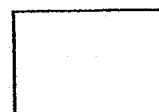
Figure Number	Number of sticks used	Number of squares
1	4	1
2	10	3
3	13	4
4	19	6
5	22	7
6		

[1]

- Complete the table for Figure 6.
- How many squares are there in Figure 50?
- How many sticks are used in Figure 101?

Ans: (b) \_\_\_\_\_ [2]

(c) \_\_\_\_\_ [2]



END OF PAPER 2