

Word Problem Worksheet
& Solutions
Nanyang 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. $\frac{3}{8}$ of Steve's height = 45 cm

$$\text{Steve's height} = 45 \div \frac{3}{8} = 45 \times \frac{8}{3} = 120 \text{ cm}$$

$$\text{Fraction of difference between the boys height} = 1\frac{1}{3} - 1 = \frac{1}{3} \text{ of Steve's height}$$

$$\text{Difference in height} = \frac{1}{3} \times 120 = 40 \text{ cm}$$

Ans: 40 cm

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7. Number of pens could be 12, 24, 36, 48, 60, 72, 84, 96.
Number of pencils could be 12, 24, 36, 48, 60, 72, 84, 96.

Let u = number of pencils
Number of pens = $2u$

u could be 12, 24, 36, 48
 $2u$ could be 24, 48, 72, 96
Number of erasers could be 164, 128, 92, 56

Therefore number of erasers = 56
As only 56 is less than $2u$ (96)

Ans: 56

8. Number of tiles along the length of the floor = $12.8 \div 0.8 = 16$

Number of tiles along the breadth of the floor = $8 \div 0.8 = 10$

Total number of tiles = $16 \times 10 = 160$

Ans: 160

9. Perimeter of 3 quarter circle = $\frac{3}{4} \times 3.14 \times 16 = 37.68$ cm

Perimeter of partial rectangle = $10 + 8 + 2 = 20$

Perimeter of figure = $20 + 37.68 = 57.68$ cm

Ans: 57.68 cm

10. $\angle CAD = 90 - 34 = 56^\circ$
 $\angle ACD = \frac{1}{2} \times (180 - 56) = 62^\circ$ (Isosceles triangle)
 $\angle CED = 180 - 86 = 94^\circ$
 $\angle BDC = 180 - 62 - 94 = 24^\circ$

Ans: 24°

11. 68% decrease $\rightarrow 357$
100% at first $\rightarrow 100 \div 68 \times 357 = 525$
Number of mint candies at first = 525

Number of mint at the end = $(100 - 68) \div 100 \times 525 = 168$

Number of cola candies at the end = $9 \div 4 \times 168 = 378$ (ratio 9 : 4)

120% $\rightarrow 378$
100% $\rightarrow 100 \div 120 \times 378 = 315$
Number of cola candies at first = 315

Ans: 315

12. At first ratio of number of T-shirts to number of caps $5 : 3 \rightarrow 25 : 15$

At last, ratio of number of T-shirts to number of caps $13 : 3$

At first	$25u : 15u$
Minus	$12u : 12u$
Equal	$13u : 3u$

$$25u + 15u = 960$$

$$40u = 960$$

$$u = 960 \div 40 = 24$$

$$\text{Number of caps sold} = 12u = 12 \times 24 = 288$$

Ans: 288

13. $\angle ONP = 112 - 64 = 48^\circ$

$$\angle NPO = 180 - 48 - 48 = 84^\circ$$

$$\angle NPQ = 180 - 64 = 116^\circ$$

$$\angle OPQ = 360 - 84 - 116 = 160^\circ$$

Ans: (a) 48°

(b) 160°

14. Let amount Brian had at first = $12u$

Amount Jia Ming had at first = $12u - 228$

Amount Brian had at last = $\frac{2}{3} \times 12u = 8u$

Amount Jia Ming had at last = $\frac{1}{4} \times (12u - 228) = 3u - 57$

Difference at the end = $8u - (3u - 57) = 5u + 57 = 302$

$5u = 302 - 57 = 245$

$u = 245 \div 5 = 49$

Amount Brian had at first = $12u = 12 \times 49 = \$588$

Ans: \$588

15. Let number of days in second month = u

Number of days in first month = $5.6 \div 2.8 \times u = 2u = \text{twice of first month}$

Rachel's expenditure in second month = p

Rachel's expenditure in first month = $5.6 \div 2.8 \times 2 \times p = 4p$

Difference of Rachel's expenditure in 2 months = $4p - p = 3p = 140 - 39.20$

$p = 100.80 \div 3 = \$33.60$

Rachel's monthly allowance = $140 + 33.60 = \$173.60$

Ans: \$173.60

16. Let number of sweets each children had at the end = u

$$\text{Number of sweets Max had at first} = u + 9 + 23 = u + 32 \quad (1)$$

$$\text{Number of sweets Ruby and Steve had at first} = u + u - 9 - 23 = 2u - 32 \quad (2)$$

$$\begin{aligned} \text{Number of sweets Max had at first} &= \frac{3}{2} \times (2u - 32) = 3u - 48 \quad \text{substitute from (2)} \\ &= u + 32 \quad \text{substitute from (1)} \end{aligned}$$

$$3u - 48 = u + 32$$

$$2u = 80$$

$$u = 40$$

(a)

Number of sweets Ruby had at the end = 40

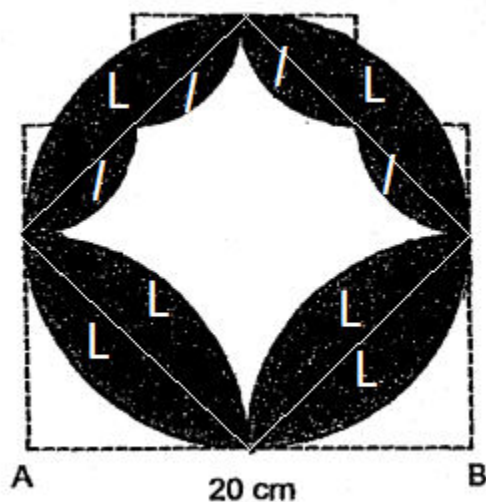
(b)

Number of sweets Steve had at first = $40 - 23 = 17$

Ans: (a) 40

(b) 17

17.



As can be seen in figure, shaded area comprises 6 large half lips L and 4 small half lips I. One lip consists of quarter circle minus triangle.

$$\text{Area of large lip L} = \frac{1}{4} \times \pi \times 10 \times 10 - \frac{1}{2} \times 10 \times 10 = 28.5 \text{ cm}^2$$

$$\text{Area of 6 large lips} = 28.5 \times 4 = 171 \text{ cm}^2$$

$$\text{Area of small lip I} = \frac{1}{4} \times \pi \times 5 \times 5 - \frac{1}{2} \times 5 \times 5 = 7.125 \text{ cm}^2$$

$$\text{Area of 4 small lips} = 7.125 \times 4 = 28.5 \text{ cm}^2$$

$$\text{Area of figure} = 171 + 28.5 = 199.5 \text{ cm}^2$$

Ans: 199.5 cm^2

For questions 6 to 17, show your working clearly 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)

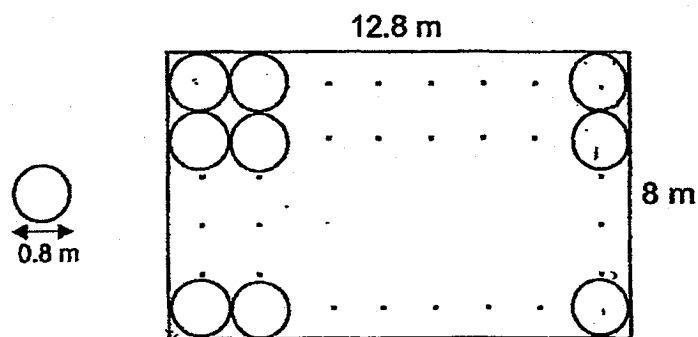
- 6 Luke is $1\frac{1}{3}$ times as tall as Steve. $\frac{3}{8}$ of Steve's height is 45 cm. Find the difference in height between the two boys.

Ans: _____ [3]

- 7 There are a total of 200 pens, pencils and erasers in a stationery shop. The number of pens and pencils are less than 100 each and they are both divisible by 3 and 4. The number of pens is twice the number of pencils and there are fewer erasers than pens. How many erasers are there?

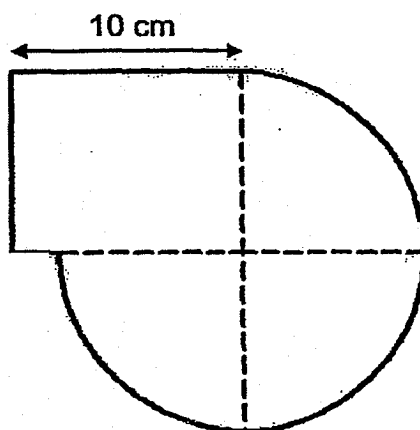
Ans: _____ [3]

- 8 The figure below shows a rectangular floor of a room measuring 12.8 m by 8 m. The rectangular floor was tiled using circular tiles of diameter 0.8 m. Each tile is in contact with those next to it. At most, how many of such tiles can be used to tile the rectangular floor?



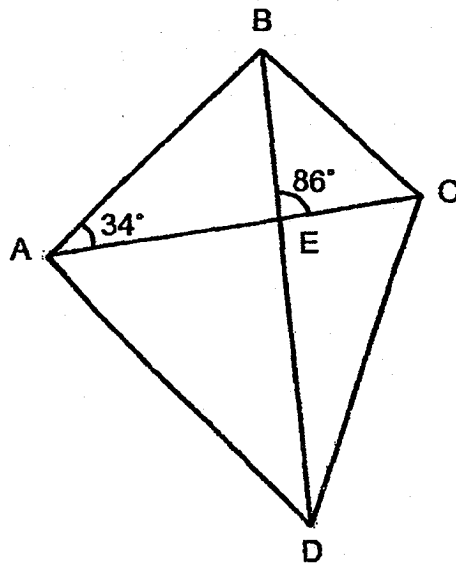
Ans: _____ [3]

- 9 The figure below is made up of 3 quarter circles and a rectangle. The rectangle has a length of 10 cm and an area of 80 cm^2 . Find the perimeter of the figure. Take $\pi = 3.14$.



Ans: _____ [3]

- 10 In the figure below, ABD and BCD are triangles. $\angle BAC = 34^\circ$, $\angle BEC = 86^\circ$ and $AC = AD$. $\angle BAD$ is a right angle and AEC is a straight line. Find $\angle BDC$.



Ans: _____ [3]

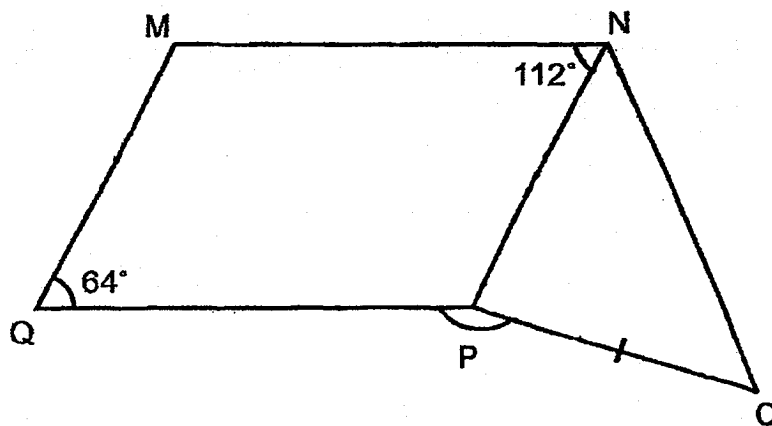
- 11** Mr Yusof's candy shop had some cola candies and some mint candies at first. He then made more cola candies and sold 357 mint candies. As a result, there was a 20% increase in the number of cola candies and a 68% decrease in the number of mint candies. In the end, the ratio of the number of cola candies to the number of mint candies was 9 : 4. Find the number of cola candies at first.

Ans: _____ [4]

- 12 A shopkeeper had a total of 960 T-shirts and caps. The ratio of the number of T-shirts to the number of caps is 5 : 3. After selling an equal number of T-shirts and caps, the ratio of the number of T-shirts left to the number of caps left was 13 : 3. How many caps did the shopkeeper sell?

Ans: _____ [4]

- 13 In the figure below, MNPQ is a parallelogram and NOP is an isosceles triangle. $\angle MQP = 64^\circ$, $\angle MNO = 112^\circ$ and $PN = PO$.



- (a) Find $\angle ONP$.
(b) Find $\angle OPQ$.

Ans: (a) _____ [2]

(b) _____ [2]

- 14 Brian had \$228 more than Jia Ming. After Brian spent $\frac{1}{3}$ of his money and Jia Ming spent $\frac{3}{4}$ of his money, the amount Brian had left was \$302 more than the amount Jia Ming had left. How much money did Brian have at first?

Ans: _____ [4]

- 15 Rachel and Elijah received a fixed amount of money every month. In the first month, Rachel spent \$5.60 per day and Elijah spent \$2.80 per day. Rachel had \$39.20 left when Elijah had spent all his money. In the second month, Rachel spent \$2.80 per day and Elijah spent \$5.60 per day. Rachel had \$140 left when Elijah had spent all his money. How much money did Rachel receive every month?

Ans: _____ [4]

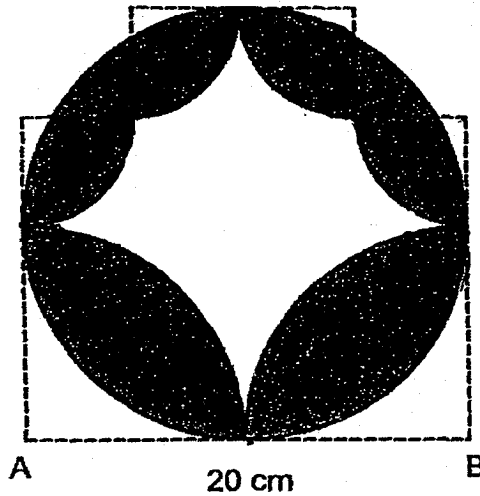
- 16 Max, Ruby and Steve shared a packet of sweets. The ratio of the total number of sweets Ruby and Steve received to the number of sweets Max received was $2 : 3$. After Max gave 9 sweets to Ruby and 23 sweets to Steve, the 3 children had the same number of sweets in the end.

- (a) How many sweets did Ruby have in the end?
- (b) How many sweets did Steve have at first?

Ans: (a) _____ [4]

(b) _____ [1]

- 17 The figure below is made up of a circle, 2 identical large quarter circles and 4 identical smaller quarter circles. The length of AB is 20 cm. Find the area of the shaded part. Take $\pi = 3.14$.



Ans: _____ [5]

End of Paper