Word Problem Worksheet

& Solutions

Difficulty: AA

Rosyth

P6 Mathematics CA1 2017

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Show your working clearly in the space provided for each question and write your answers in the spaces provided.

6. Jolene paid $24 for 20 muffins after a 20% discount. How many muffins could she have bought with the same amount of money without the discount?

Cost of 20 muffins = $24
Cost of 1 muffin = 24 ÷ 20 = $1.20

80% → $1.20
10% → 1.20 ÷ 8 = 0.15
100% → 0.15 x 10 = $1.50

Number of muffins without discount = 24 ÷ 1.50 = 16

Ans: _____

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7. There were 7 participants who took part in a quiz. Their average score was g. Later, 2 more participants joined the quiz. Each of them scored 20 mark.
   (a) What was the new total score for all the participants? Express your answer in terms of g in the simplest form.
   (b) If g = 29, find the new average score of all the participants.

a) Total score of 7 participants = 7g

Total score of 2 new participants = 2 x 20 = 40

Total score of all participants = 7g + 40

b) Total score of all participants = 7 x 29 + 40 = 243

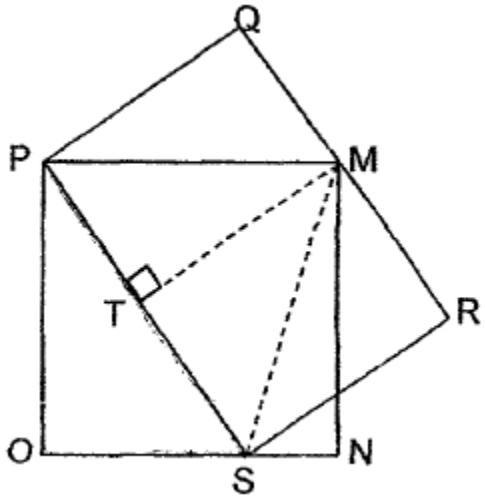
Average score = 243 ÷ 9 = 27

Ans: (a) _____

(b) _____

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8. The figure below, not drawn to scale, is made up of a square MNOP and a rectangle PQRS. The length of the square is 9 cm and MT = 7.2 cm. Find the area of the rectangle PQRS.



Area of triangle PMS = $\frac{1}{2}$ x 9 x 9 = 40.5 cm^2

As triangle in a rectangle has half the area of rectangle.

Rectangle PQRS = 40.5 x 2 = 81 cm^2

Ans: _____

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9. Chairs were arranged in rows of 28 in the school hall. During the Chinese New Year concert, the chairs were rearranged to form rows of 24. As a result, there were 7 more rows. The last row was 4 chairs short. How many chairs were there in the hall?

Additional chairs = 6 x 24 + 20 = 164

Difference between 28 and 24 = 28 – 24 = 4

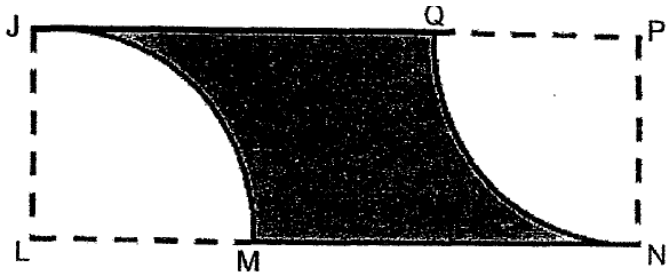
Number of rows = 164 ÷ 4 = 41

Total number of chairs = 41 x 28 = 1148

Ans: _____

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10. Two identical quarter circles of radius 14 cm were cut from the rectangle piece of wood, JLNP, as shown below. The remaining piece of wood (the shaded area) has an area of 266 cm^2. Find the length of MN. Take $\pi = \frac{22}{7}$.



Area of 2 quarter circle = half circle = $\frac{1}{2} \times \frac{22}{7} \times 14 \times 14 = 308\ cm^2$

Area of rectangle = 308 + 266 = 574 cm^2

Length MN = 574 ÷ 14 = 41 cm

Ans: _____

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11. John cut out 4 small identical squares from a square piece of cardboard. The area of the 4 small identical squares to the area of the remaining cardboard was 1 : 3. The perimeter of the remaining cardboard was 320 cm.

(a) What was the area of the cardboard?
(b) What is the maximum number of 12 cm squares that he would be able to cut from the remaining cardboard?

Perimeter of 3 quarter square = 320 cm
Length = 320 ÷ 4 = 80 cm
Area of whole cardboard = 80 x 80 = 6400 cm^2

Number of 12 cm sides that can be cut from 1 quarter square of 40 cm length= 40 ÷ 12 = 3 remainder 4 cm
Number of 12 cm squares that can be cut from 40 x 40 cm square = 3 x 3 = 9

Number of 12 cm squares from 3 squares of 40 cm x 40 cm = 9 x 3 = 27

Ans: (a) _____

(b) _____

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12. There are red, green and blue ribbons in a box. The length of each red ribbon, green ribbon and blue ribbon is 2 m, 3 m and 4 m respectively. The ratio of the number of red ribbons to the number of green ribbons and to the number of blue ribbons is 4 : 7 : 8.

The total length of all the green ribbons is 315m.

(a) What is the ratio of the length of all the red ribbons to the length of all the blue ribbons? Express your answer in the simplest form.
(b) What is the total length of all the ribbons?

a)

Ratio of length of red, green and blue → 4 x 2 : 7 x 3 : 4 x 8 → 8: 21 : 32

Ratio of length of red to blue ribbons : 8 : 32 → 1 : 4

b)

Ratio of length of red, green, blue → 8u : 21u : 32u

21u → 315m

u = 315 ÷ 21 = 15

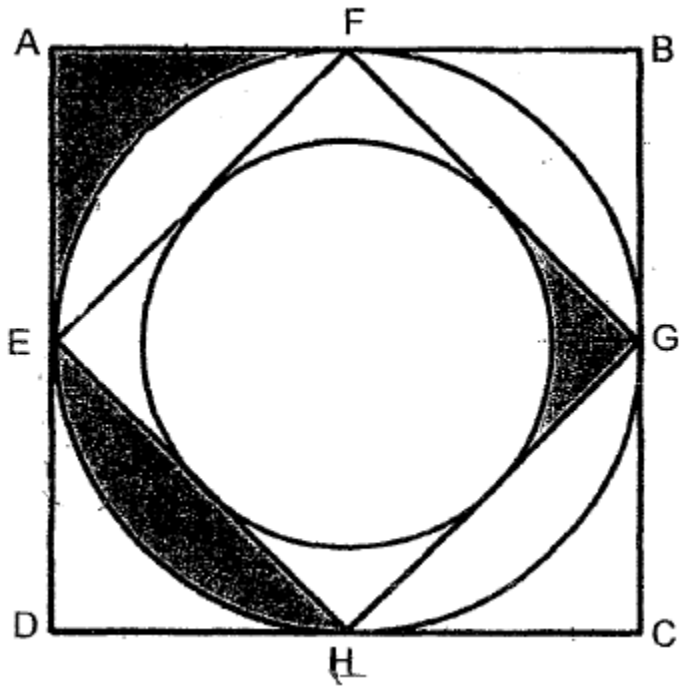
Total length → 8u + 21u + 32u = 61u = 61 x 15 = 915 m.

Ans: (a) _____

(b) _____

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13. The figure is made up of 2 squares, ABCD and EFGH, and 2 circles. The length AF = FB. The area of square EFGH is 64 cm^2. Find the area of the shaded parts. Round off your answer to 2 decimal places. (Use the calculator value of π)



Area of EFGH = 8 x 8 = 64
EF = 8 cm
Area of arc FGH = quarter square – quarter circle

= 64 ÷ 4 - π x 4 x 4 ÷ 4 = 16 - 4 π = 3.432 cm^2

Area of △EFG = 64 ÷ 2 = 32 cm^2

Area of ABGE = 32 x 2 = 64 cm^2

Area of ABCD = 64 x 2 = 128 cm^2 = 11.31 X 11.31

AB = 11.31 cm, AF = 11.31 ÷ 2 = 5.655

Area of arc EAF = 128 ÷ 4 - (π x 5.655 X 5.655 ÷ 4) = 6.88 cm^2

Area of EDH = (π x 5.655 X 5.655 ÷ 4) – 64 ÷ 4 = 9.11 cm^2

Shaded area = 3.432 + 6.88 + 9.11 = 19.42 cm^2

Ans: _____

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14. $\frac{5}{12}$ of the visitors at a carnival are adults. The rest of the visitors are boys and girls in the ratio of 5 : 4. There are 84 more boys than girls. There are 621 females at the carnival.

(a) How many children are there at the carnival?

(b) How many males are there at the carnival?

a)

Ratio of boys and girls → 5u : 4u

5u – 4u → 84

u = 84

9u = 9 x 84 = 756

Total number of children = 756

b)

7p → 756

p → 756 ÷ 7 = 108

Total visitors = 12p = 108 x 12 = 1296

Number of males = 1296 – 621 = 675

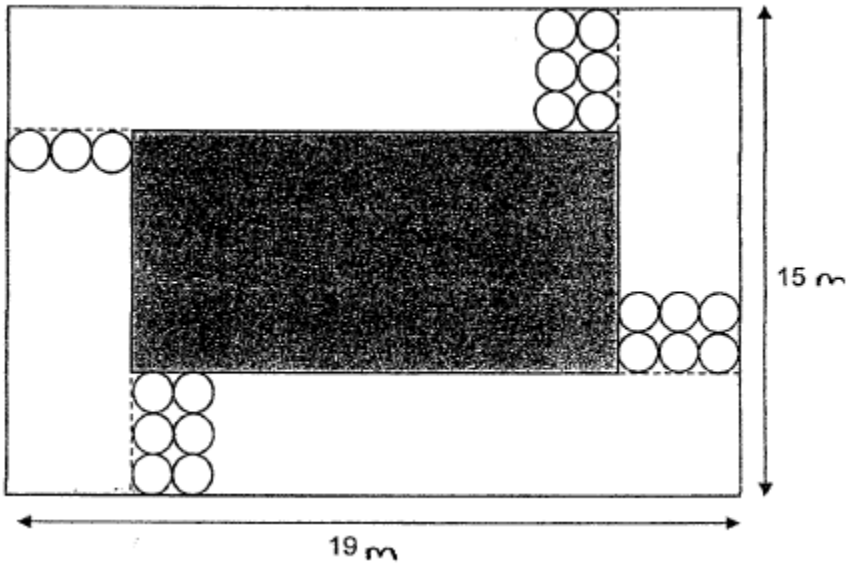
Ans: (a) _____

(b) _____

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15. Caitin wants to lay circular stone tiles of diameter 1 m all round a rectangular pond to create a foot path 3 m wide all around as shown below. What is the minimum number of tiles she will need?

(The tiles must be arranged as shown in the diagram. They cannot overlap each other and there must be no gap between each tile.)



Area of foot path = 19 x 3 x 2 + (15 – 6) x 3 x 2 = 114 + 54 = 168m^2

Number of tiles needed = 168 ÷ 1 = 168

Ans: _____

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16. Alicia and Clara had a total of 764 beads. They each used some of their beads to make a necklace each and keep the remaining beads.

Alicia had $\frac{1}{3}$ as many beads remaining as Clara after making their necklaces.

The number of beads Clara used to make her necklace was 63 more than what she had left. Clara used 3 times as many beads as Alicia to make her necklace.

(a) How many beads were used to make the 2 necklaces?

(b) How many beads did Alicia have at first?

a)

Let u = number of beads Alicia used

Number of beads Clara used = 3u

Total beads used = u + 3u = 4u

Number of beads Clara had left = 3u – 63

Number of beads Alicia had left = $\frac{1}{3}$ (3u – 63) = u – 21

Total beads = 4u + (u – 21) + 3u -63 = 764

8u = 764 + 21 + 63 = 848

u = 848 ÷ 8 = 106

Total beads used = 4u = 4 x 106 = 424

b)

Number of beads Alicia had at first = u + (u – 21) = 2 x 106 – 21 = 191

Ans: (a) _____

(b) _____

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17. The number of children who enrolled in a swim school in September was 30% fewer than the number of children who had enrolled in June. There were 87 more children who enrolled in December as compared to September. There were 375 children who enrolled in the swim school in June, September and December.

(a) How many children enrolled in the swim school in December?
(b) What was the percentage decrease / increase in the number of children who enrolled in June as compared to December?

a)

Let u = number of children enrolled in June

Number of children enrolled in Sept = 0.7u

Number of children enrolled December = 87 + 0.7u

Total enrolled in June, September and December = u + 0.7u + (87 + 0.7u) = 375

2.4u = 375 – 87 = 288

u = 288 ÷ 2.4 = 120

Number enrolled in December = 87 + 0.7u = 87 + 0.7 x 120 = 171

b)

June enrollment – December enrollment = u – (87 + 0.7u) = 0.3u – 87 = -51

Percentage change in Jun as compared with December = (- 51 ÷ 171) x 100 =

- 29.8%

Ans: (a) _____

(b) _____

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18. The table below shows the number of GaME cards in each different coloured pack and its price.

Colour of Pack	Number of cards	Cost per Pack
Red	3	$0.40
Blue	7	$0.70
Black	12	$1.00

Starting on Monday, Ryan bought an average of 3 packs of red and blue GaME cards each day. On each Sunday, he bought only a black pack of GaME cards.

After 44 days, he had spent $74.70 on the GaME cards and had 722 cards

(a) How much did Ryan spend on the red and blue GaME cards altogether?

(b) How many packs of Blue GaME cards did Ryan buy?

a)

44 days equals 6 weeks plus 2 days

6 Sundays – cost of black cards → 6 x $1 = $6

Number of weekdays = 44 – 6 = 38

Total spent on red and blue cards during all weekdays = 74.70 – 6 = $68.70

b)

Number of packs of red & blue cards = 38 x 3 = 114

Excess amount = 68.70 – (114 x 0.4) = $23.10

Difference between red and blue price = 0.7 – 0.4 = 0.3

Number of blue card packs = 23.10 ÷ 0.3 = 77 packs

Ans: (a) _____

(b) _____

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Answer Key

Subject: Primary 6 Maths – Word Problem Solutions
Paper: CA1 2017
Grade: AA Rosyth

6. 16
7. a) 7g + 40 b) 27
8. 81 cm^2
9. 1148
10. 27 cm
11. a) 6400 cm^2 b) 27 squares
12. 1 : 3 b) 795 m
13. 19.42 cm^2
14. a) 756 b) 675
15. 168
16. a) 424 b) 191
17. a) 171 b) - 29.8%
18. a) $68.70 b) 77

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Solutions provided by http://www.sgtestpaper.com/
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6. Jolene paid $24 for 20 muffins after a 20% discount. How many muffins could she have bought with the same amount of money without the discount?

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Cost of 1 muffin = 24 ÷ 20 = $1.20

80% → $1.20
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Ans: 16

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7. There were 7 participants who took part in a quiz. Their average score was g. Later, 2 more participants joined the quiz. Each of them scored 20 mark.
   (a) What was the new total score for all the participants? Express your answer in terms of g in the simplest form.
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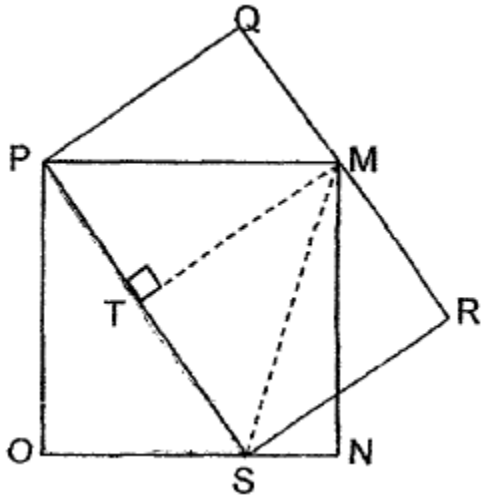
Average score = 243 ÷ 9 = 27

Ans: (a) 7g + 40

(b) 27

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8. The figure below, not drawn to scale, is made up of a square MNOP and a rectangle PQRS. The length of the square is 9 cm and MT = 7.2 cm. Find the area of the rectangle PQRS.



Area of triangle PMS = $\frac{1}{2}$ x 9 x 9 = 40.5 cm^2

As triangle in a rectangle has half the area of rectangle.

Rectangle PQRS = 40.5 x 2 = 81 cm^2

Ans: 81 cm^2

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9. Chairs were arranged in rows of 28 in the school hall. During the Chinese New Year concert, the chairs were rearranged to form rows of 24. As a result, there were 7 more rows. The last row was 4 chairs short. How many chairs were there in the hall?

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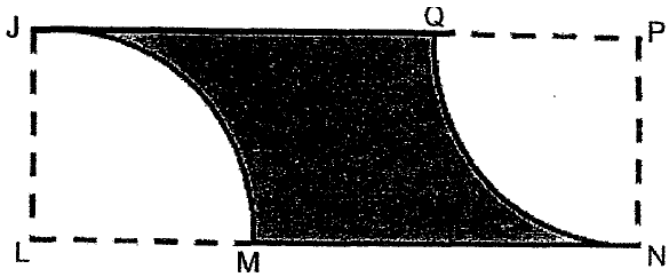
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Total number of chairs = 41 x 28 = 1148

Ans: 1148

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10. Two identical quarter circles of radius 14 cm were cut from the rectangle piece of wood, JLNP, as shown below. The remaining piece of wood (the shaded area) has an area of 266 cm^2. Find the length of MN. Take $\pi = \frac{22}{7}$.



Area of 2 quarter circle = half circle = $\frac{1}{2} \times \frac{22}{7} \times 14 \times 14 = 308\ cm^2$

Area of rectangle = 308 + 266 = 574 cm^2

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Length MN = 41 – 14 = 27 cm

Ans: 27 cm

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11. John cut out 4 small identical squares from a square piece of cardboard. The area of the 4 small identical squares to the area of the remaining cardboard was 1 : 3. The perimeter of the remaining cardboard was 320 cm.

(a) What was the area of the cardboard?
(b) What is the maximum number of 12 cm squares that he would be able to cut from the remaining cardboard?

Perimeter of 3 quarter square = 320 cm
Length = 320 ÷ 4 = 80 cm
Area of whole cardboard = 80 x 80 = 6400 cm^2

Number of 12 cm sides that can be cut from 1 quarter square of 40 cm length= 40 ÷ 12 = 3 remainder 4 cm
Number of 12 cm squares that can be cut from 40 x 40 cm square = 3 x 3 = 9

Number of 12 cm squares from 3 squares of 40 cm x 40 cm = 9 x 3 = 27

Ans: (a) 6400 cm^2

(b) 27

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12. There are red, green and blue ribbons in a box. The length of each red ribbon, green ribbon and blue ribbon is 2 m, 3 m and 4 m respectively. The ratio of the number of red ribbons to the number of green ribbons and to the number of blue ribbons is 4 : 7 : 6.

The total length of all the green ribbons is 315m.

(a) What is the ratio of the length of all the red ribbons to the length of all the blue ribbons? Express your answer in the simplest form.
(b) What is the total length of all the ribbons?

a)

Ratio of length of red, green blue ribbons → 4x 2u : 7 x 3u : 6 x 4u

21u → 315m

u = 315 ÷ 21 = 15

All red ribbon length = 8u = 8 x 15 = 120

All blue ribbon length = 32u = 24 x 15 = 360

Ratio of length of red and blue ribbons → 120 : 360 → 1 : 3

b)

Ratio of length of red, green, blue → 8u : 21u : 24u

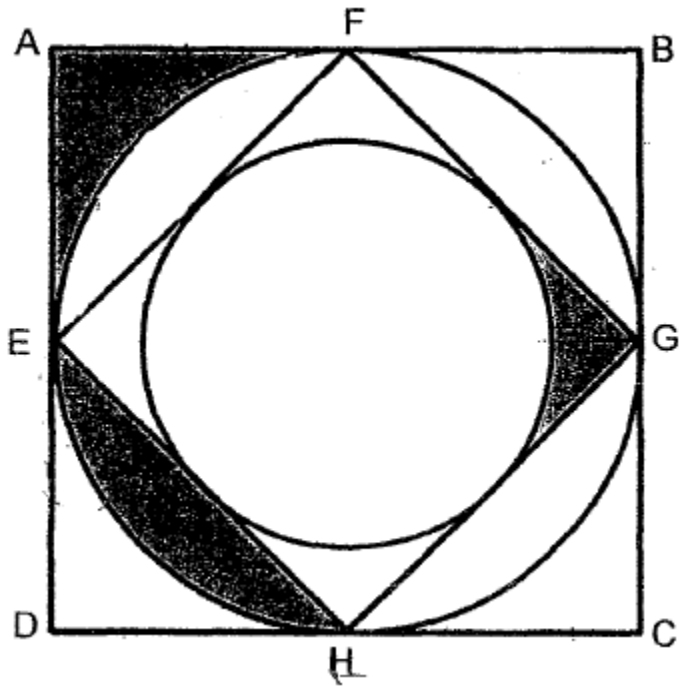
Total length = 53u = 53 x 15 = 795 m

Ans: (a) 1 : 3

(b) 795 m

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13. The figure is made up of 2 squares, ABCD and EFGH, and 2 circles. The length AF = FB. The area of square EFGH is 64 cm^2. Find the area of the shaded parts. Round off your answer to 2 decimal places. (Use the calculator value of π)



Area of EFGH = 8 x 8 = 64
EF = 8 cm
Area of arc FGH = quarter square – quarter circle

= 64 ÷ 4 - π x 4 x 4 ÷ 4 = 16 - 4 π = 3.432 cm^2

Area of △EFG = 64 ÷ 2 = 32 cm^2

Area of ABGE = 32 x 2 = 64 cm^2

Area of ABCD = 64 x 2 = 128 cm^2 = 11.31 X 11.31

AB = 11.31 cm, AF = 11.31 ÷ 2 = 5.655

Area of arc EAF = 128 ÷ 4 - (π x 5.655 X 5.655 ÷ 4) = 6.88 cm^2

Area of EDH = (π x 5.655 X 5.655 ÷ 4) – 64 ÷ 4 = 9.11 cm^2

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Ans: 19.42 cm^2

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14. $\frac{5}{12}$ of the visitors at a carnival are adults. The rest of the visitors are boys and girls in the ratio of 5 : 4. There are 84 more boys than girls. There are 621 females at the carnival.

(a) How many children are there at the carnival?

(b) How many males are there at the carnival?

a)

Ratio of boys and girls → 5u : 4u

5u – 4u → 84

u = 84

9u = 9 x 84 = 756

Total number of children = 756

b)

7p → 756

p → 756 ÷ 7 = 108

Total visitors = 12p = 108 x 12 = 1296

Number of males = 1296 – 621 = 675

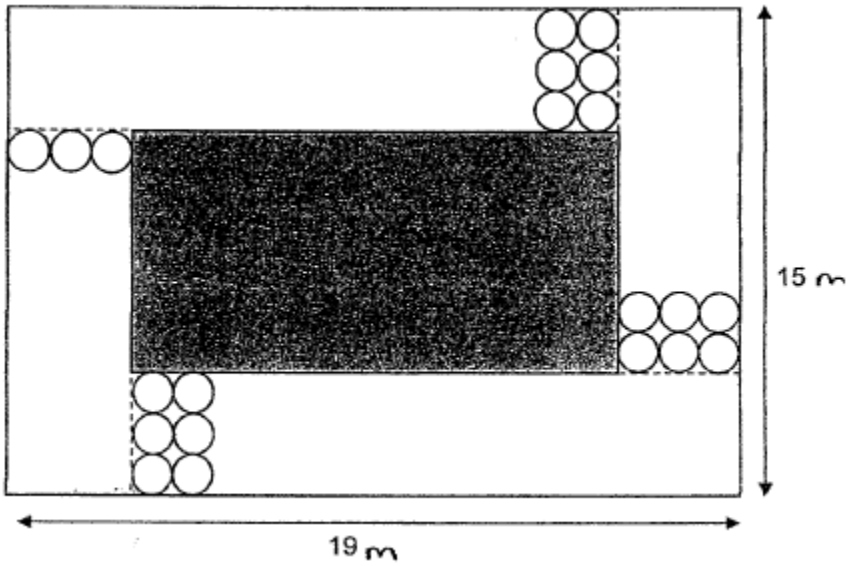
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(b) 675

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(The tiles must be arranged as shown in the diagram. They cannot overlap each other and there must be no gap between each tile.)



Area of foot path = 19 x 3 x 2 + (15 – 6) x 3 x 2 = 114 + 54 = 168m^2

Number of tiles needed = 168 ÷ 1 = 168

Ans: 168

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16. Alicia and Clara had a total of 764 beads. They each used some of their beads to make a necklace each and keep the remaining beads.

Alicia had $\frac{1}{3}$ as many beads remaining as Clara after making their necklaces.

The number of beads Clara used to make her necklace was 63 more than what she had left. Clara used 3 times as many beads as Alicia to make her necklace.

(a) How many beads were used to make the 2 necklaces?

(b) How many beads did Alicia have at first?

a)

Let u = number of beads Alicia used

Number of beads Clara used = 3u

Total beads used = u + 3u = 4u

Number of beads Clara had left = 3u – 63

Number of beads Alicia had left = $\frac{1}{3}$ (3u – 63) = u – 21

Total beads = 4u + (u – 21) + 3u -63 = 764

8u = 764 + 21 + 63 = 848

u = 848 ÷ 8 = 106

Total beads used = 4u = 4 x 106 = 424

b)

Number of beads Alicia had at first = u + (u – 21) = 2 x 106 – 21 = 191

Ans: (a) 424

(b) 191

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(a) How many children enrolled in the swim school in December?
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a)

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Number of children enrolled December = 87 + 0.7u

Total enrolled in June, September and December = u + 0.7u + (87 + 0.7u) = 375

2.4u = 375 – 87 = 288

u = 288 ÷ 2.4 = 120

Number enrolled in December = 87 + 0.7u = 87 + 0.7 x 120 = 171

b)

June enrollment – December enrollment = u – (87 + 0.7u) = 0.3u – 87 = -51

Percentage change in Jun as compared with December = (- 51 ÷ 171) x 100 =

- 29.8%

Ans: (a) 171

(b) - 29.8%

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Colour of Pack	Number of cards	Cost per Pack
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After 44 days, he had spent $74.70 on the GaME cards and had 722 cards

(a) How much did Ryan spend on the red and blue GaME cards altogether?

(b) How many packs of Blue GaME cards did Ryan buy?

a)

44 days equals 6 weeks plus 2 days

6 Sundays – cost of black cards → 6 x $1 = $6

Number of weekdays = 44 – 6 = 38

Total spent on red and blue cards during all weekdays = 74.70 – 6 = $68.70

b)

Number of packs of red & blue cards = 38 x 3 = 114

Excess amount = 68.70 – (114 x 0.4) = $23.10

Difference between red and blue price = 0.7 – 0.4 = 0.3

Number of blue card packs = 23.10 ÷ 0.3 = 77 packs

Ans: (a) $68.70

(b) 77

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