Word Problem Worksheet

& Solutions

Rosyth Paper 2

P6 Mathematics Prelim 2023

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.   Let number of students = 10u

Donations of ½ of students = ½ x 10u x 3 = 15u

Donations of 2/5 students = $\frac{2}{5}$ x 10u x 4 = 16u

Fraction of rest of students = u - ½ - $\frac{2}{5}$ = $\frac{10-5-4}{10}$ = $\frac{1}{10}$

Donations of rest of students = $\frac{1}{10}$ x 10u x 5 = 5u

Total donations = 15u + 16u + 5u = 36u

36u = 9000

u = 9000 ÷ 36 = 250

Number of students = 10u = 10 x 250 = 2500

Ans: 2500

---

7.   Clips   Magnets
     Total   4000
     Give away   50   10%
     Left   1125

90% → 1125

10% → 1125 ÷ 9 → 125

100% → 125 x 10 → 1250

Number of magnets at first = 1250

Number of clips at first = 4000 – 1250 = 2750

Ans: 2750

---

8.   Number of groups = 210 ÷ 3 = 70

Number of all-girls groups = 70 – 23 – 34 = 13

Number of all-boys groups = 13 x 2 = 26

Number of 2 boys 1 girl groups = 34 – 26 = 8

Total number of girls = (13 x 3) + (1 x 8) + (23 x 2) = 93

Ans: 93

---

9.   a)

Total base area = 700 + 40 x 50 = 2700 cm^2

Height of water in container B = 21 600 ÷ 2700 = 8 cm

b)

Container B pour out to Container A

Volume of water in Container B = 40 x 50 x 8 = 16 000 cm^3

Volume of water in both container in the end = 21 600 ÷ 2 = 10 800 cm^3

Volume of water to pour out = 16 000 – 10 800 = 5200 cm^3 = 5.2 ℓ

Ans: a) 8 cm

b) 5.2 ℓ

---

10. ∠ACD = ∠BAC = ½ x (180 – 46) = 67°   (ABC isosceles)

    ∠FCD = 180 – 128 = 52°   (parallelogram)

    ∠ACG = 67 – 52 = 15°

    Ans: 15°

---

11. Number of each colour sticker at the end = 94 080 ÷ 4 = 23 520

    Number of red sticker at first = 23 520 x $\frac{100}{160}$ = 14 700

    Number of blue stickers at first = 23 520 x $\frac{100}{70}$ = 33 600

    Number of white stickers at first = 23 520 x $\frac{7}{5}$ = 32 928

    Difference in white stickers = 32 928 – 23 520 = 9408

    Number of green stickers at first = 23 520 – 9408 = 14 112

    Total stickers at first = 14 700 + 33 600 + 32 928 + 14 112 = 95 340

    Ans: 95 340

---

12.   a)

   ∠CBE = 90 – 60 = 30°   (ABE is equilateral triangle)

   b)

   ∠ABH = 45°

   ∠BHG = 180 – 45 – 18 = 117°

<div align="right">

Ans: a) 30°

b) 117°

</div>

---

13.   a)

   Collection by Shop A on Monday and Tuesday = 1.20 x (96 + 100) = $235.20

   b)

   Percentage increase in number of pens sold by Shop C from Monday to Tuesday

   = (122 – 115) ÷ 115 x 100 = 6.086% ≈ 6.09%

   c)

   Collection by Shop B on Monday = 80 x 1.50 = $120

   Collection by Shop B on Tuesday = 120 – 6.60 = $113.40

   Discounted price in Shop B on Tuesdy = 113.40 ÷ 108 = $1.05

   Percentage discount = (1.50 – 1.05) ÷ 1.50 x 100 = 30%
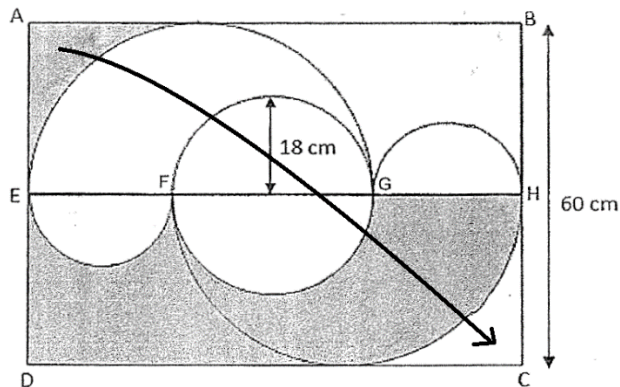
<div align="right">

Ans: a) $235.20

b) 6.09%

c) 30%

</div>

---

14. a)

Number of cars painted before Robot B stopped working = 50

b)

Number of cars painted by Robot A in 10 hours = (85 – 50) x 2 = 70

Ans: a) 50

b) 70

---

15. a)

EF = 60 – 36 = 24 cm

b)

Area of CDEH = (60 + 24) x 30 = 2520 cm^2

Radius of semi-circle EF = 24 ÷ 2 = 12 cm

Area of semi-circle at EF = ½ x π x 12 x 12 = 72 π cm^2

Area of sem-circle at FG = ½ x π x 18 x 18 = 162 π cm^2

Area of shaded parts = 2520 - 72π - 162π = 1800 – 234 x 3.14 = 1785.24 cm^2

Ans: a) 24 cm

b) 1785.24 cm^2

16. a)

Nth number in pattern = 8 + (n-1)

103rd number = 8 + (103-1) = 110

b)

Number at the corners in pattern =

9,10,12,14,17,20,24,28,33,35   (1st to 10th corners)

38,44,50,57,64,72,80,89,98,108,118   (11th to 20th corners)

129   (21st corner)

Ans: a) 110

b) 118, 129

---

17. a)

Let 1% of original price of laptop with GST = u

100% = 100u

Total discounted price of 3 laptops = 85u + 70u + 60u = 215u

215u = 5805

u = 5805 ÷ 215 = 27

100u = 27 x 100 = $2700

Price of laptop without discount without GST = 2700 ÷ 1.08 = $2500

b)

3 discounted laptop price without GST = 5805 ÷ 1.08 = 5375

Additional amount if buying 3 laptop without discount without GST

= 2500 x 3 – 5375 = $2125

Ans: a) $2500

b) $2125