

Word Problem Worksheet
& Solutions
Tao Nan 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. a)

$$\angle FCA = 104^\circ \quad (\text{vertically opposite angles})$$

$$\angle GCA = 51^\circ \quad (\text{alternate angles})$$

$$\angle FCG = 104 - 51 = 53^\circ$$

b)

$$\angle GAC = 90 - 51 = 39^\circ$$

Ans: a) 53°

b) 39°

7. a)

$$\text{Percent more fruits in B than in A} = \frac{120-70}{70} \times 100 = \frac{500}{7} = 71 \frac{3}{7}$$

b)

$$\text{Number of oranges in Box C} = \frac{1}{2} \times (90 - 4) = 43$$

$$\text{Number of apples in Box A} = 90 - 43 = 47$$

c)

$$\text{Total number of fruits in all boxes} = 90 \times 4 = 360$$

$$\text{Number of fruits in box D} = 360 - 70 - 120 - 90 = 80$$

Ans: a) $71 \frac{3}{7}$

b) 47

c) 80

8. Area of triangle XYZ = $\frac{1}{2} \times 10 \times 10 = 50 \text{ cm}^2$
Area of quarter circle = $\frac{1}{4} \times 3.14 \times 5 \times 5 = 19.625 \text{ cm}^2$
Area of triangle on OZ = $\frac{1}{2} \times 5 \times 5 = 12.5 \text{ cm}^2$
Shaded area = $50 - 19.625 - 12.5 = 17.875 \text{ cm}^2$

Ans: 17.875 cm^2

-
- 9*. Let u = used length of ribbon of each person
Ratio of original length of ribbon of Ai Le, Bee Huan and Cally =
 $\frac{u}{40} : \frac{u}{10} : \frac{u}{50} = 5u : 20u : 4u$
Total length at first = $5u + 20u + 4u = 29u$
 $29u = 870 \text{ cm}$
 $u = 870 \div 29 = 30$
Length of ribbon left = $5u \times 0.6 + 20u \times 0.9 + 4u \times 0.5 = 3u + 18u + 2u =$
 $23u = 23 \times 30 = 690 \text{ cm} = 6.9 \text{ m}$

Ans: 6.9 m

10. Time for Ralph to travel $3.5 \times 3 \text{ km} = 7 \div 20 = 0.175 \text{ h} = 21 \text{ min}$
Time Steve reached finishing line = $10:45 - 21 \text{ min} = 11:06$

Ans: 11:06

-
11. Number of small tray eggs that Hawker B bought = $19 \times 12 = 228$
Number of eggs of Hawker A = $228 + 1416 = 1644$
Number of small tray eggs of Hawker A = $12 \times 12 = 144$
Number of big tray eggs of Hawker A = $1644 - 144 = 1500$
Number of big trays of Hawker A = $1500 \div 50 = 30$
Total number trays of eggs of both hawkers = $2 \times (12 + 30) = 84$

Ans: 84

12. a)
 $\angle XBY = \frac{1}{2} \times (180 - 82) = 49^\circ$ (rhombus)
 $\angle CBY = 180 - 49 = 131^\circ$
 $\angle c = \frac{1}{2} \times (180 - 131) = 24.5^\circ$ (CBY is isosceles triangle)
- b)
 $\angle WXZ = 19^\circ$ (alternate angles)
 $\angle w = 180 - 19 - 57 = 104^\circ$

Ans: a) 24.5°
 b) 104°

13. Let $120u =$ number of cookies baked (4 x 5 x 6)
- | | Cream cookies | Plain cookies |
|---|---------------------------------|----------------------------------|
| Baked | $\frac{3}{4} \times 120u = 90u$ | $\frac{1}{4}u \times 120u = 30u$ |
| Sold | $\frac{5}{6} \times 90u = 75u$ | 210 |
| Total left | $\frac{1}{5} \times 120u = 24u$ | |
| Total left = $120u - 75u - 210 = 24u$ | | |
| $21u = 210$ | | |
| $u = 210 \div 21 = 10$ | | |
| Number of cookies sold = $75u + 210 = 75 \times 10 + 210 = 960$ | | |

Ans: a) 960

14. a)

Let length of small cube = u

Length of large cube = $2u$



Volume of 6 large cube = $6 \times 2u \times 2u \times 2u = 48 u^3$

Volume of next large cube = $4u \times 4u \times 4u = 64 u^3$

Least number of small cubes needed = $64 - 48 = 16$

Or

Number of large cube required = $8 - 6 = 2$

Number of equivalent small cube = $2 \times (2 \times 2 \times 2) = 16$

b)

$2744 = 14 \times 14 \times 14$

Length of 1 large cube = $14 \div 2 = 7 \text{ cm}$

Length of 1 small cube = $7 \div 2 = 3.5 \text{ cm}$

Ans: a) 16

b) 3.5 cm

15. a)

Average = $(29 + 30 + 31 + 37 + 39 + 45 + 46 + 47) \div 8 = 38$

b)

Middle number = $344 \div 8 = 43$

34	35	36
42	43	44
50	51	52

Sum of even numbers = $34 + 36 + 42 + 44 + 50 + 52 = 258$

Ans: a) 38

b) 258

16*. a)

$$\text{Number of red rubber bands} = \frac{1}{2} \times (1284 - 828) = 228$$

$$\text{Number of yellow rubber bands} = 228 + 828 = 1056$$

b)

Let n = number of red paper bags

u = number of red rubber bands in each bag

Red rubber bands	$n \times u = 228$
------------------	--------------------

Yellow rubber bands	$n(u + 6)$	$n(u + 6)$	$n(u + 6)$	$n(u + 6)$
---------------------	------------	------------	------------	------------

$$\text{Difference in rubber bands between them} = 4n(u + 6) - nu = 828$$

$$3nu + 24n = 828$$

$$nu + 8n = 276 \quad (\text{divide all by 3})$$

$$8n = 276 - 228 \quad (\text{substitute } nu = 228)$$

$$n = 48 \div 8 = 6 = \text{bags of red rubber bands}$$

c)

$$\text{Number of red rubber bands in each bag} = 228 \div 6 = 38$$

$$\text{Number of blue rubber bands in each bag} = 38 + 6 = 44$$

Ans: a) 1056

b) 6

c) 44

17. Let u = length of square

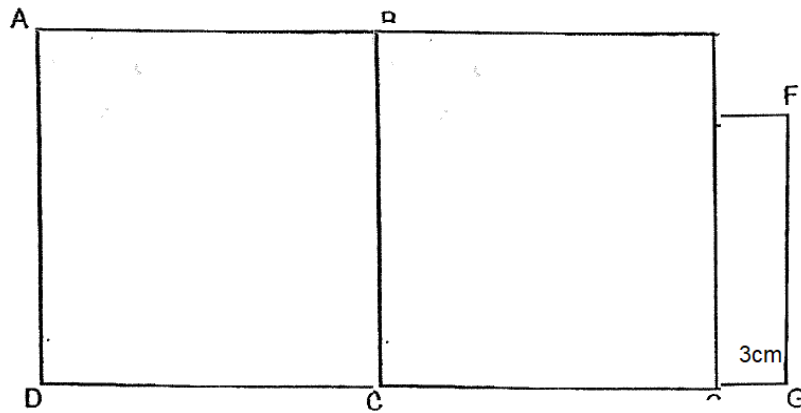
$$\text{Perimeter of figure} = 2 \times 49 + 2u = 4u + 4u - 2 \times (u - 3)$$

$$98 = 4u + 6$$

$$4u = 98 - 6 = 92$$

$$u = 92 \div 4 = 23 \text{ cm}$$

Or



As perimeter of square & rectangle are same, reduction in height equals to increase in width

$$DC = \frac{1}{2} \times (49 - 3) = 23 \text{ cm}$$

$$EC = 23 - 3 = 20 \text{ cm}$$

$$CG = 23 + 3 = 26 \text{ cm}$$

$$\text{Area of figure} = 23 \times 23 + 20 \times 26 = 1049 \text{ cm}^2$$

Ans: 1049 cm^2