P4 syllabus

Numeration
Number notation and place values, including decimals
4 operations
Factors and multiples (including HCF and LCM)
Solving word problems involving the 4 operations

Fractions
Mixed numbers and improper fractions
Addition, Subtraction and multiplication
Interpretation of fraction as a part of a set of objects
Solving word problems

Measurement
Time in years, months, weeks, days, hours, minutes and seconds, 24-hour clock
Area and Perimeter of composite figures

Geometry
Angles of composite figures
Symmetry
Spatial visualisation

Data Analysis
Interpreting data from tables, bar charts and line graphs

Logic
Inferring and deducing relationships between objects given a set of clues

		Topics	Total marks	Question Numbers
1 to 10	2 marks	Numeration	28	25, 20, 15, 14, 10, 2, 1
11 to 20	4 marks	Logic	23	24, 19, 17, 13, 7
21	6 marks	Fractions	18	23, 18, 12, 6
22	7 marks	Measurement	13	22, 11, 3
23	8 marks	Data Analysis	12	21, 16, 4
24	9 marks	Geometry	6	9, 8, 5
25	10 marks			

P4

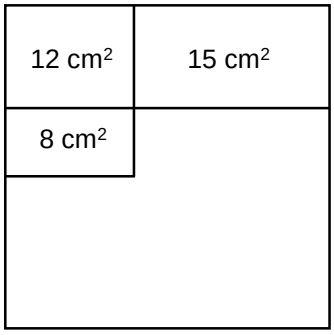
1. How many 4-digit numbers are exactly 2017 more than a 2-digit number?

2017 more than 10 is 2027.
2017 more than 99 is 2116.
2116 – 2026 = 90
There are 90 numbers. They are the numbers from 2027 to 2116.

2. Samuel gave away 114 muffins equally among his relatives.
He has between 20 to 40 relatives.
How many muffins did Samuel give to each relative?

Factors of 114 are 1, 2, 3, 6, 19, 38, 57 and 114.
38 is between 20 and 40.
114 ÷ 38 = 3
Samuel gave 3 muffins to each relative.

3. The diagram shows a square divided into 4 parts.
The area of 3 of the parts are given. What is the area of the fourth part?



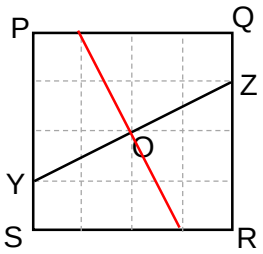
Common factor of 15 and 12 is 3.
Combined area = 12 + 15 = 27 cm^2
Length of square = 27 ÷ 3 = 9 cm
Area of square = 9 × 9 = 81 cm^2
Area of fourth part = 81 – 12 – 15 – 8 = 46 cm^2

4. The table shows the number of soccer games Jay played in June and July but not in August and September. If Jay played a total of 27 games from June to September, on which month did Jay play the most number of games?

Month	No. of games
June	9
July	10
August	?
September	?

27 – 10 – 9 = 8
The total number of games played in August and September is 8, which is less than the number in July, which is 10. Hence, Jay played the most number of games in July.

5. In the figure, PQRS is a square. Draw ONE more line WX inside the square so that the square is divided into 4 quarters. What is ∠WOZ?



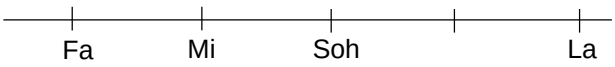
∠WOZ = 90°

6. What are the values of A and B?

$$\frac{5}{A} = \frac{20}{32} = \frac{B}{24}$$

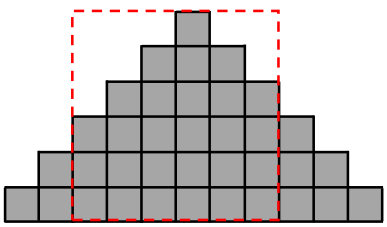
Since 5 × 4 = 20, then A × 4 = 32, and A must be 32 ÷ 4 = 8
Since A = 8, and 8 × 3 = 24, then 5 × 3 = B, and B = 15

7. Four sparrows, Mi, Fa, Soh, and La, are sitting on a fence. Mi sits exactly between Fa and Soh. The distance between Fa and Soh is the same as the distance between Soh and La. Mi sits 12 m from La. How far is Fa sitting from La?



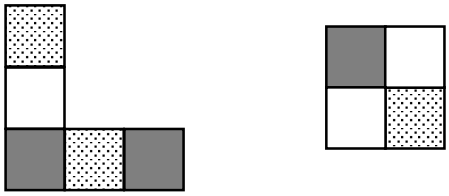
Distance between Mi and La = 3 units
1 unit → 12 ÷ 3 = 4 m
4 units → 4 × 4 = 16 m
Fa is sitting 16 m from La.

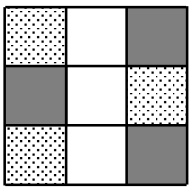
8. Halim made a pyramid using 36 small square tiles. Siti wants to move the tiles to transform the pyramid into a big square. What is the least number of tiles that Siti has to move?



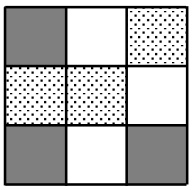
Ans: Siti must move at least 9 tiles.

9. Which shape will be formed if the two sections were fitted together?

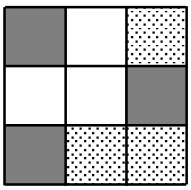




(A)



(B)



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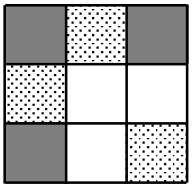

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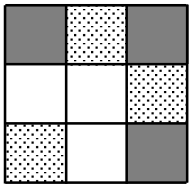
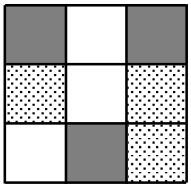


(E)



(F)

Notice that a white square will either only touch another white square along one side and the other white square at the corner, or touch both other white squares at corners. Therefore options A, C, D and E are wrong.

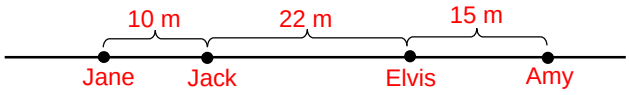
To decide between B and F, notice that two of the dark squares must be separated by a dotted square. Therefore, only option B is correct.

10. Jim is 6 times as old as Tom. If Jim is 40 years older than Tom, how old will Tom be after 6 years?

5 units → 40 years
1 unit → 40 ÷ 5 = 8 years
Tom will be 8 + 6 = 14 years old after 6 years.

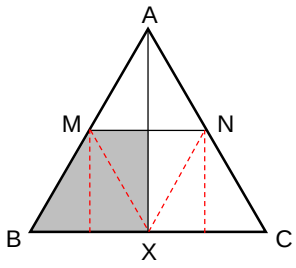
11. Jack, Amy, Jane and Elvis are standing along the road but not necessarily in that order. The distance between Jack and Jane is 10 m, between Amy and Elvis is 15 m, and between Jack and Elvis is 22 m. What is the largest possible distance between Amy and Jane?

For the largest possible distance between Amy and Jane, they each has to be on opposite sides of Jack. Hence,



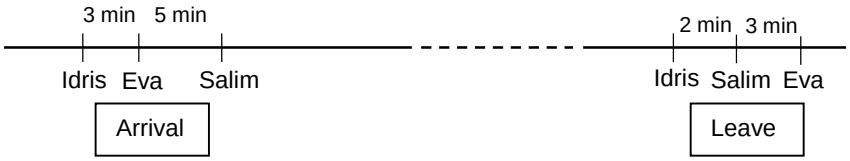
The largest possible distance = 10 + 22 + 15 = 47 m

12. In the triangle, ABC, AB = AC and M and N are mid-points of AB and AC respectively. AX is perpendicular to BX. What fraction of triangle ABC is shaded?



Fraction shaded is $\frac{3}{8}$

13. Eva arrived at the library 5 minutes earlier than Salim but 3 minutes after Idris. Idris left first. She left 2 minutes earlier than Salim and 5 minutes earlier than Eva. What is the time difference between the one who stayed for the longest time and the one who stayed for the shortest time?



Eva stayed 5 + 3 = 8 min longer than Salim.
Idris stayed 8 – 2 = 6 min longer than Salim.
The one who stayed for the shortest time is Salim and the one for the longest is Eva.
Hence, the largest difference is 8 min.

14. What is the digit in the Hundreds place of the product of 44 444 and 99 999?

Doing the multiplication up to the Hundreds place:

$$
\begin{array}{r}
4\ 4^{3}4^{3}4\ 4 \\
\times\ 9\ 9\ 9\ 9\ 9 \\
\hline
\ldots\ldots\ldots{}^{1}9\ 9\ 6 \\
\ldots\ldots\ldots\ldots\ 9\ 6 \\
\ldots\ldots\ldots\ldots\ 6 \\
\ldots\ldots\ldots\ldots \\
\ldots\ldots\ldots \\
\hline
\ldots\ldots\ldots\ldots\ 5\ 5\ 6
\end{array}
$$

The digit in the Hundreds place is 5.

15. Yani and Zoe collect buttons. Yani only collects buttons with two holes and Zoe only collects buttons with four holes. Yani has collected 10 more buttons than Zoe. There is a total of 200 holes in all of their buttons. How many buttons do they have altogether?

1 set → one button with 2 holes and one button with 4 holes, that is 6 holes
Since Yani has 10 more buttons, there were 10 × 2 = 20 holes
200 – 20 = 180
180 ÷ 6 = 30 sets
Total number of buttons → (30 + 10) + 30 = 70

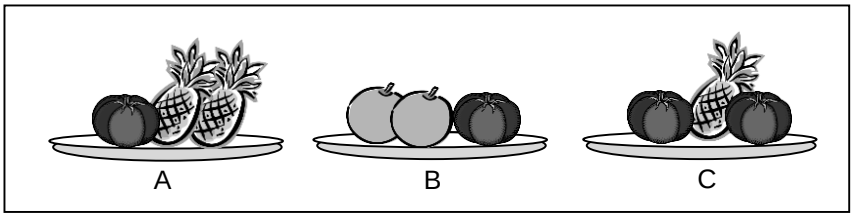
16. Cross out 8 of these numbers so that the remaining 13 numbers add up to 67.

3	3	3	3	3	3	3
4	4	4	4	4	4	4
7	7	7	7	7	7	7

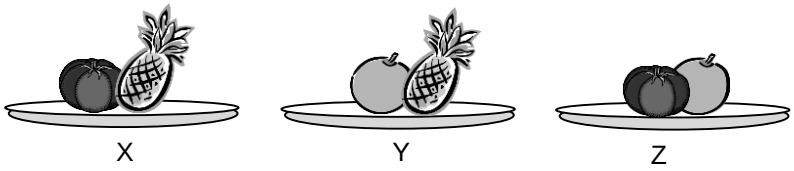
3 × 7 = 21
4 × 7 = 28
7 × 7 = 49
21 + 28 + 49 = 98
98 – 67 = 31

cross out all seven 4s and one 3, or
cross out four 3s, three 4s and one 7.

17. Three plates of fruits A, B, and C are arranged in increasing order of their weight.



Arrange the following three plates in increasing order of their weight.



2 pineapples are lighter than 2 pomelos which is lighter that 1 pumpkin + 1 pineapple
→ the pineapple is lighter than the pomelo which is lighter than the pumpkin.
Hence, Plate Y is the lightest and Plate Z is the heaviest.
Ans: Y, X, Z

18. There is a total of 22 tricycles and bicycles in a rental shop and a total of 50 wheels. What fraction of all the wheels belong on bicycles?

If all 22 were bicycles, there would have been 44 wheels.
Since there were 50 wheels, there were 50 – 44 = 6 extra wheels belonging to tricycles.
22 – 6 = 16 bicycles.
Number of wheels on bicycles = 16 × 2 = 32
Fraction $= \frac{32}{50} = \frac{16}{25}$

19. Each of the 4 teams, represented by Red House, Blue House, Green House and Yellow House, sent 2 members to take part in a race. The result at the finish is as follows:

There is 1 runner between the pair from Red House, 2 runners between the pair from Blue House, 3 runners between the Green pair and 4 runners between the Yellow pair. If the last runner is from Blue House, which Houses do the first three runners represent?

Fill in the blanks in the Answer Sheet.

The order is Blue Green Yellow Blue Red Green Red Yellow
(last)……(first)

First runner is from Yellow House.

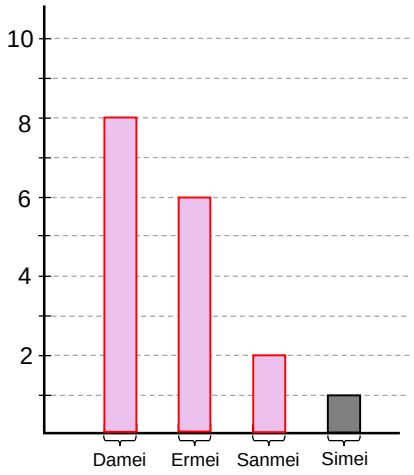
Second runner is from Red House.

Third runner is from Green House.

20. Tim has a sum of money. If he buys 10 apples, he would be short of $3.
If he buys 8 apples, he would have 60¢ leftover. How much money does Tim have?

10 – 8 = 2 apples
2 apples cost ($3 + 60¢) = $3.60
1 apple costs $3.60 ÷ 2 = $1.80
8 apples cost $1.80 × 8 = $14.40
Tim has $14.40 + 60¢ = $15

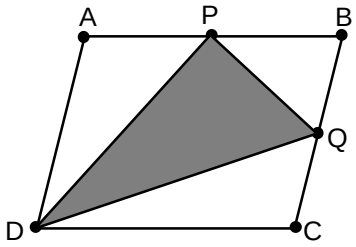
21. Two years after Damei was born, Ermei was born. Four years later, Sanmei was born. This year, Damei is 4 times as old as Sanmei. The bar graph below shows the age of Simei who was born last year. Complete the bar chart below to show the ages of Damei, Ermei and Sanmei.



22. A rectangular sheet of paper measures 192 mm by 84 mm. Suppose the sheet is cut into two parts - a square and a rectangle, and the rectangle is further cut into two parts - another square and rectangle. Then this process continues until only two squares remain. What is the length of the side of the smallest square obtained in this way?

The first cut would make a square 84 mm by 84 mm and a rectangle 108 mm by 84 mm.
The second cut would make a square 84 mm by 84 mm and a rectangle 24 mm by 84 mm.
The third cut would make a square 24 mm by 24 mm and a rectangle 60 mm by 24 mm.
The fourth cut would make a square 24 mm by 24 mm and a rectangle 36 mm by 24 mm.
The fifth cut would make a square 24 mm by 24 mm and a rectangle 12 mm by 24 mm.
The sixth cut would make two squares 12 mm by 12 mm.
The length of the side of the smallest square is 12 mm.

23. In the diagram below, *ABCD* is a parallelogram.
P is the midpoint of *AB* and *Q* is the midpoint of *BC*.
If the area of *ABCD* is 24 unit^2, what is the area of triangle *DPQ*?



Area of Triangle ADP = $\frac{1}{4}$ × 24 = 6 unit^2

Area of Triangle DQC = $\frac{1}{4}$ × 24 = 6 unit^2

Area of Triangle PBQ = $\frac{1}{8}$ × 24 = 3 unit^2

Area of Triangle DPQ = 24 – 6 – 6 – 3 = 9 unit^2

24. In a KenKen 4-by-4 puzzle, the digits 1, 2, 3 and 4, are used to fill the spaces in the grid so that no digit appears more than once in any row or any column, and the digits inside the cells (marked by darker lines) add up to the number given inside the cell.

Example:

8 1	4	3	9 2
6 2	3 3	3 1	4
4	6 1	2	3
3	2	5 4	1

For the puzzle below, one of the spaces has been filled for you. Fill in all the remaining spaces.

6 1	5 4	5 3	2
2	1	5 4	7 3
3	2 2	1	4
7 4	3	3 2	1

25. If you wrote all the whole numbers from 1 through 8888, how many times would you write the digit 8?

The digit 8 appears from 1 to …

(a) … 8880 in the Ones place, once in every 10 numbers. Hence it appears
8880 ÷ 10 × 1 = 888 times
From 1 to 8888 it appears 888 + 1 = 889 times in the Ones place

(b) … 8800 in the Tens place, 10 times in every 100 numbers. Hence it appears
8800 ÷ 100 × 10 = 880 times
From 1 to 8888 it appears 880 + 9 = 889 times

(c) … 8000 in the Hundreds place, 100 times in every 1000 numbers. Hence it appears
8000 ÷ 1000 × 100 = 800 times
From 1 to 8888 it appears 800 + 89 = 889 times

(d) ... 8888 in the Thousands place, 889 times

In total, it appears 889 × 4 = 3556 times.