

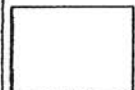
17. Mr Kim gave a sum of money to Amy, Bel, Chloe and Dina. Amy took \$240. Bel took \$60 more than $\frac{2}{5}$ of the remaining sum of money.

The rest of the money was given to Chloe and Dina. Dina took \$12 more than $\frac{2}{5}$ of the rest of the money. Chloe took all the money that was left over. Chloe took \$36 more than Dina.

What was the sum of money that Mr Kim had given to the 4 girls?

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Ans : _____ [5]



17*. Solution 1

Let total amount Kim given to 4 girls = $25u$ (5 x 5 of denominator)

Amount Amy took = \$240

Remainder = $25u - 240$

Amount Bel took = $\frac{2}{5} \times \text{remainder} + 60 = \frac{2}{5} \times (25u - 240) = 10u - 96 + 60$
 $= 10u - 36$

Rest of money = $(25u - 240) - (10u - 36) = 15u - 204$

Amount Diana took = $\frac{2}{5} \times \text{rest of money} + 12 = \frac{2}{5} \times (15u - 204) + 12$
 $= 6u - 69.6$

Amount Diana took also = $\frac{1}{2} \times (\text{rest of money} - \$36) = \frac{1}{2} \times (15u - 204 - 36)$
 $= \frac{15}{2}u - 120$

$6u - 69.6 = \frac{15}{2}u - 120$

$\frac{3}{2}u = 120 - 69.6 = 50.4$

$u = \frac{2}{3} \times 50.4 = 33.60$

Total amount Kim given = $25u = 25 \times 33.60 = \840

Ans: \$840

17*. Solution 2

Rest of money

Diana	1/5	1/5			+\$12
Chloe			1/5	1/5	+\$12+\$36
					1/5 = 12+12+36= \$60

$1/5 \rightarrow \$60$

Rest of money = $60 \times 5 = \$300$

Total						
Amy	\$240					

Remainder		1u	1u	1u	1u	1u
Bel		1u	1u	\$60→		
Rest of money					\$300	

$$3u = 60 + 300 = 360$$

$$1u = 360 \div 3 = \$120$$

$$2u = 120 \times 2 = \$240$$

$$\text{Total} = 240 + 2u + 360 = 600 + 240 = \$840$$

- 17 The first four figures of a pattern are shown below.

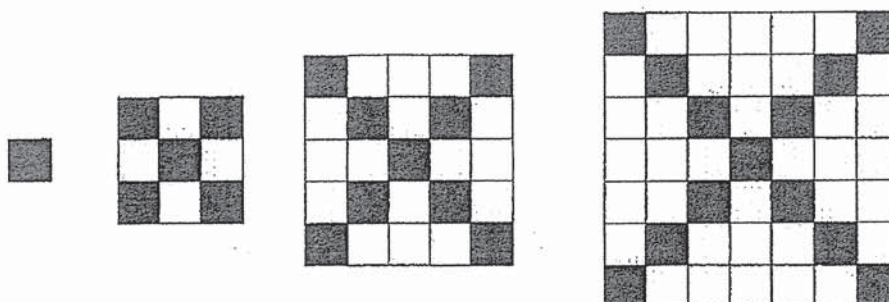


Figure 1 Figure 2 Figure 3 Figure 4

The table below shows the number of black squares and white squares in each figure.

Figure number	1	2	3	4
Number of black squares	1	5	9	13
Number of white squares	0	4	16	36

- (a) What is the total number of black squares and white squares in figure 5?
- (b) How many white squares are there in figure 6?
- (c) How many black squares are there in figure 15?

Ans: (a) _____ [1]

(b) _____ [2]

(c) _____ [2]

End of Paper

17*. a)

Total number of black & white square $\rightarrow 1, 9, 25, 49, 81$

Total number of square in Figure 5 = 81

b)

Let n = figure number

Length of square = $u \rightarrow 1, 3, 5, 7, 9, 11$

Additional white square each increment = $(u-2) \times 4 = 4u - 8$

Additional white square $\rightarrow 0, +4, +12, +20, +28, +36$

White square $\rightarrow 0, 4, 16, 36, 64, 100$

Number of white square in Figure 6 = 100

c)

Number of black squares = $(n - 1) \times 4 + 1 = 4n - 3$

Number of black square in Figure 15 = $4 \times 15 - 3 = 57$

Ans: a) 81

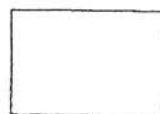
b) 100

c) 57

8. Mrs Lee bought apple tarts, peach tarts, curry buns and butter buns at a shop. The ratio of the number of tarts to the number of buns was 4 : 9. There were twice as many curry buns as butter buns. The ratio of the number of apple tarts to the number of peach tarts was 5 : 7. There were 117 more curry buns than apple tarts. How many tarts and buns did Mrs Lee buy altogether?

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Ans: _____ [3]



8*. Ratio of number of

Tarts : Buns

4 : 9

12 : 27 (x 3)

12u : 27u

Apple : Peach

5u : 7u (total 12u = Tarts total)

Curry : Butter

2 : 1

18 : 9 (x 9)

18u : 9u (total 27u = Buns total)

Ratio of number of

Apple tarts : Peach Tarts : Curry buns: Butter buns

5u : 7u : 18u : 9u

Difference between curry buns & apple tarts = $18u - 5u = 13u = 117$

$u = 117 \div 13 = 9$

Total number of tarts & buns = $5u + 7u + 18u + 9u = 39u = 47 \times 9 = 351$

Ans: 351

- 10 Five numbers were written on the whiteboard as shown below:

62, 43, 120, 11, 99

- (a) Write down the 3 numbers that will give an average of 51.
- (b) After John wrote a 2-digit number on the same whiteboard, the new average of the six numbers became a multiple of 3. What was the largest possible 2-digit number written by John?

Ans: (a) _____ [1]

(b) _____ [2]

10*. a)

Total of 3 numbers = $3 \times 51 = 153$

$$153 = 11 + 99 + 43$$

3 numbers are 11, 99, 43

b)

Total of 5 numbers = 62, 43, 120, 11, 99 = 335

Average of 6 numbers is multiple of 3

Total of 6 numbers is multiple of $3 \times 6 = 18$

New number	99	98	97	96
Total	434	433	<u>432</u>	431
Divisible by 18?				

432 is divisible by 18. So 97 is the new number

Ans: 97

Ans: 9 weeks

17. Kelly bought a piece of fabric. She used 9.2 m to sew 4 aprons and 5 kitchen towels. She wanted to sew another apron but was short of 0.3 m of fabric. In the end, she sewed another kitchen towel and had 0.38 m of fabric left.

(a) What was the difference in the length of the fabric needed to sew an apron and a towel? Give your answer in metres.

(b) How many metres of fabric did Kelly buy?

Ans : (a) _____ [1]

(b) _____ [3]

End of Paper

☺ Please check your work carefully ☺

17*. a)

Difference between apron & kitchen towel = $0.3 + 0.38 = 0.68\text{m}$

b)

Let length of towel = x

Length of apron = $x + 0.68\text{m}$

Length of

4 aprons + 5 towels = 9.2 m

$4(x + 0.68) + 5x = 9.2$

$9x + 2.72 = 9.2$

$9x = 9.2 - 2.72 = 6.48$

$x = 6.48 \div 9 = 0.72\text{ m}$

apron length = $x + 0.68 = 0.72 + 0.68 = 1.4\text{m}$ 5 aprons + 5

towels = $u + 0.3$

$5 \times 1.4 + 5 \times 0.72 = u + 0.3$

(1)

$u = 7 + 3.6 - 0.3 = 10.3\text{ m} = \text{total length of fabric}$

Ans: a) 0.68 m

b) 10.3 m

- 17 The first four figures of a pattern are shown below.

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Figure 1

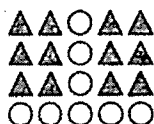


Figure 2

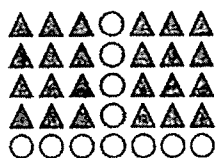


Figure 3

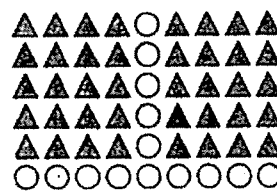


Figure 4

The table below shows the number of circles and triangles used in each figure.

Figure Number	Figure 1	Figure 2	Figure 3	Figure 4	Figure 5
Number of circles	5	8	11	14	
Number of triangles	4	12	24	40	

[1]

- (a) Fill in the table for Figure 5.
- (b) How many circles are there in Figure 39?
- (c) How many triangles are there in Figure 60?

Ans: (b) _____ [2]

(c) _____ [2]

17*. a)

Figure number = n

Number of circles = $3n + 2$

Number of triangles = $2n(n + 1)$

17, 60

b)

Number of circles in Figure 39 = $3 \times 39 + 2 = 119$

c)

Number of triangles in Figure 60 = $2 \times 60 (60 + 1) = 7320$

Ans: a) 17, 60

b) 119

c) 7320

17. The first four figures of a pattern are shown below.

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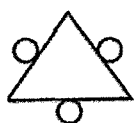


Figure 1

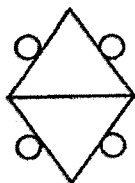


Figure 2

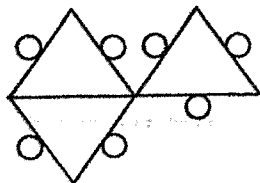


Figure 3

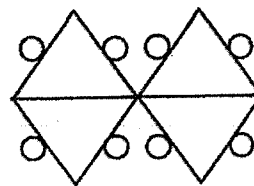


Figure 4

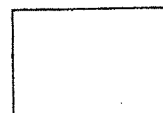
The table below shows the number of triangles and circles used for each figure.

Figure Number	Number of triangles	Number of circles	Total number of triangles and circles
1	1	3	4
2	2	4	6
3	3	7	10
4	4	8	12
5			16

[2]

- (a) Complete the table for Figure 5.
(b) Find the total number of triangles and circles for Figure 15.

Ans: (b) _____ [2]



END OF PAPER 2

17*. a)

5, 11

b)

Let n = figure number

Number of triangles = n

For odd figure,

Number of circles = $2n + 1$

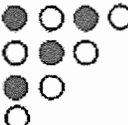
Total number of triangles & circles for Figure 15 = $n + 2n + 1 = 3n + 1$

= $3 \times 15 + 1 = 46$

Ans: a) 5, 11

b) 46

16. The first four figures of a pattern are shown below.

			
Figure 1	Figure 2	Figure 3	Figure 4

The table shows the number of grey and white beads used for each figure.

Figure	Number of Grey Beads	Number of White Beads	Total Number of Beads
1	1	0	1
2	1	2	3
3	4	2	6
4	4	6	10
5		6	

[1]

(a) Fill in the table for Figure 5.

(b) Find the number of white beads for Figure 21.

Ans: (b) _____ [2]

(c) Each of the statements is either true, false or not possible to tell from the information given. For each statement, put a tick (✓) to indicate your answer.

Statement	True	False	Not possible to tell
i) The number of white beads in each figure is always even.			
ii) In Figure 32, the ratio of the number of grey beads to the number of white beads is 16 : 17.			

[2]

16*. a)

9. 15

b)

Let n = figure number

For n numbers 3,5,7,9,11,13,15,17,19,21

White beads = $2+4+6+8+10+12+14+16+18+20 = 110$

c)

Grey beads for even $n = n/2 \times n/2$

Grey beads for 32 = $16 \times 16 = 256$

For n numbers 21, 23, 25, 27, 29, 31,33

white beads for 32 = $110 + 22+24+26+28+30+32 = 272$

ratio of grey vs white = $256:272 = 16:17$

True, True

Ans: a) 9. 15

b) 110

c) T, T
