Date: 21/03/2024

Topic: SEA Exam

Title: SEA Math Exam 2024 – **Solutions**

SECTION I

1. Write the numeral for two hundred and thirty thousand, five hundred and sixty-three.

Answer_____ 230 563 _____

2. Write the value of the underlined digit in the numeral below.

9<u>5</u> 367

Answer_____ 5000 _____

3. A common factor of 15 and 18 is 1. What other common factor is common to 15 and 18?

Factors of 15 are: 1, 3, 5, 15

Factors of 18 are: 1, 2, 3, 6, 9, 18

Common factors are 1 and 3.

Answer_____ 3 _____

4. Write ONE of the following symbols in the box below to make the number sentence correct.

> = <

8 693 [>] 8 639

Between 8 693 and 8 639, the larger number is 8 693.

So, 8 693 > 8 639.

Answer_____ > _____

5. $9\overline{)927}$

$$\begin{array}{r} 103 \\ 9\overline{)927} \\ \underline{900} \\ 27 \\ \underline{27} \\ 00 \end{array}$$

Answer_____ 103 _____

6. $7-\frac{2}{3}=$

$$7-\frac{2}{3}=6+1-\frac{2}{3}$$

$$=6+\frac{3}{3}-\frac{2}{3}$$

$$=6+\frac{1}{3}$$

$$=6\frac{1}{3}$$

Answer_____ $6\frac{1}{3}$ _____

7. Write 0.40 as a fraction in its **lowest** terms.

$0.40 = \frac{40}{100}$

$= \frac{2}{5}$

Answer_____ $\frac{2}{5}$ _____

8. $3.12 \times 4 =$

$$\begin{array}{r} 3.12 \\ \times \quad 4 \\ \hline 12.48 \end{array}$$

Answer_____ 12.48 _____

9. 15% of 300 =

$15\% \text{ of } 300 = \frac{15}{100} \times \frac{300}{1}$

$= 45$

Answer_____ 45 _____

10. An incomplete pattern is shown below.

36, 28, 21, 15, _____, 6

What is the missing element in the pattern?

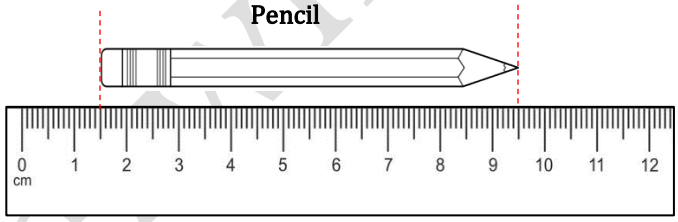
$36, \xrightarrow{-8} 28, \xrightarrow{-7} 21, \xrightarrow{-6} 15, \xrightarrow{-5} \_\_10\_\_, \xrightarrow{-4} 6$

The missing element $= 15 - 5$

$= 10$

Answer_____ 10 _____

11. What is the length of the pencil shown below?



Length $= 9.5 - 1.5$

$= 8$ cm

Answer_____ 8 _____ cm

12. Aidan left home at 6:45 a.m. and arrived at school at 7:25 a.m.

How long was his journey?

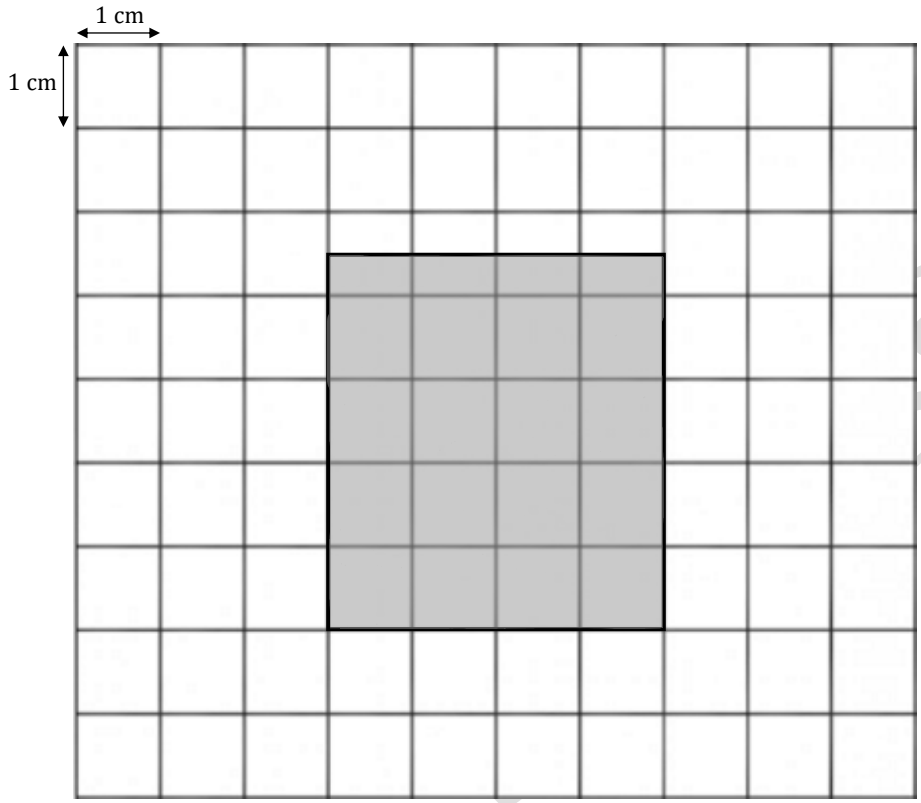
Length of journey = 7 : 2 5

− 6 : 4 5

0 : 4 0

Answer_____ 40 _____ minutes

13. A shaded shape is shown on the 1 cm grid below.



What is the area of the shape?

The shape has 16 whole squares and 4 half squares.

The 4 half squares are equivalent to 2 whole squares.

So,

Number of whole squares = 16 + 2

= 18

Area of 1 square $= s \times s$

$= 1 \times 1$

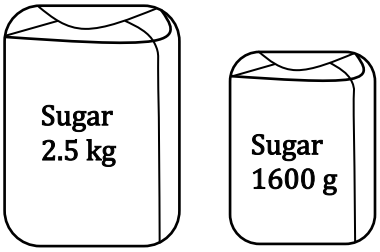
$= 1 \text{ cm}^2$

Area of 18 squares $= 18 \times 1$

$= 18 \text{ cm}^2$

Answer_____ 18 _____ cm^2

14. Two packs of sugar are shown below.



What is the **difference** between their masses?

1 kg = 1000 g

2.5 kg = 2.5 × 1000

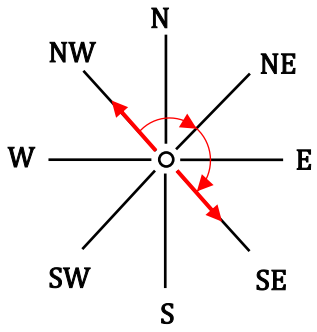
= 2500 g

Difference = 2500 − 1600

= 900 g

Answer_____ 900 _____ g

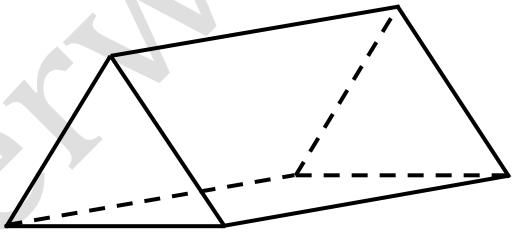
15. Gillian is standing at O and facing NW. She makes quarter turns and is now facing SE.



What is the **least** number of quarter turns made by Gillian?

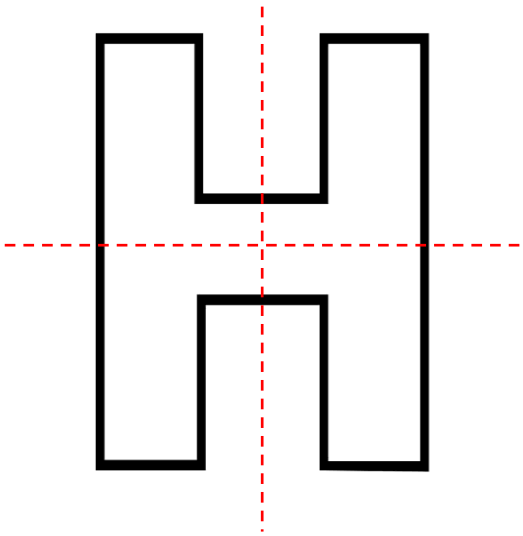
Answer_____ 2 _____ quarter turns

16. How many vertices are there in the solid shown below?



Answer_____ 6 _____ vertices

17. Draw ALL lines of symmetry on the shape below.



18. The mean of three numbers is 12. Two of the numbers are 10 and 11. What is the **third** number?

Total $= 3 \times 12$

$= 36$

So far, the sum of the numbers is $= 10 + 11$

$= 21$

Missing number $= 36 - 21$

$= 15$

Answer_____ 15 _____

19. The tally chart below shows the types of gifts students received.

Gift Students Received

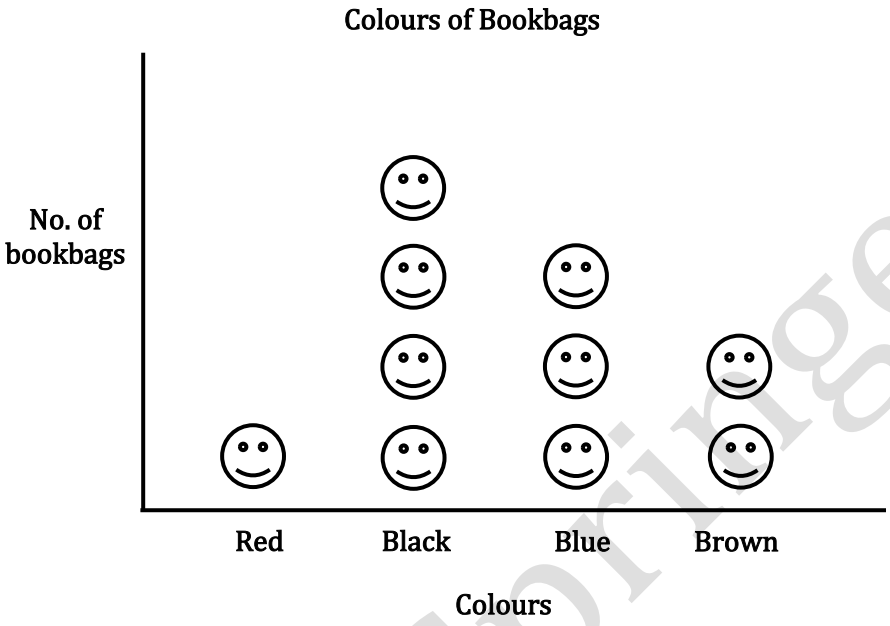
Gift	Tally
Bicycles	𝍸 ||||
Books	𝍸 |
Cellphones	𝍸 𝍸 𝍸 ||
Tablets	𝍸 𝍸 𝍸

Which gift represents the mode?

The mode is Cellphones (occurs most often).

Answer_____ Cellphones _____

20. The pictograph below shows the colours of students' bookbags.



If 32 of the bookbags are black, how many are blue?

4 ☺ = 32

1 ☺ = $\frac{32}{4}$

= 8 bags

Hence,

Number of blue bags = 3 × 8

= 24 blue bags

Answer_____ 24 _____ bookbags

SECTION II

21. $\frac{3}{4} \times 32 = \square^2 - 1$ [2]

L.H.S. $= \frac{3}{4} \times 32$

$= 24$

Consider R.H.S.

$\square^2 - 1 = 24$

$\square^2 = 24 + 1$

$\square^2 = 25$

$\square = \sqrt{25}$

$\square = 5$

Answer $\square$ = _____ 5 _____

22. A packet of sweets was shared among 4 students. Each student received 15 sweets and there were 5 sweets remaining.

What was the **total** number of sweets in the packet? [2]

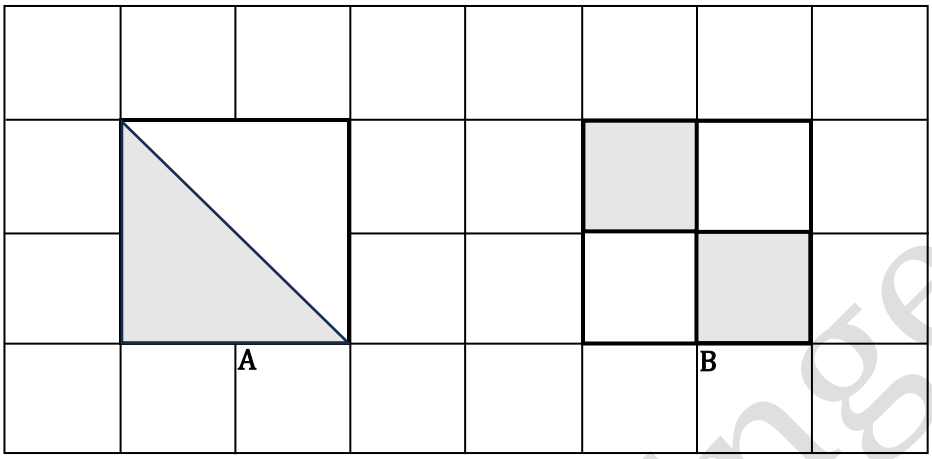
Number of sweets in the packet $= (15 \times 4) + 5$

$= 60 + 5$

$= 65$ sweets

Answer_____ 65 _____ sweets

23. Two fraction models, A and B, are shown on the grid below.



Explain why the fraction models represent equivalent fractions. [2]

Answer: Both A and B have a total of 4 squares. This is the denominator of the fraction. The shaded squares for each fraction models are:

A: 1 whole + 2 halves = 2 squares

B: 2 wholes = 2 squares

So, the numerator is 2.

This means that both models show 2 shaded parts out of four.

$\therefore A = B = \frac{2}{4} = \frac{1}{2}$

24. Two fruit stalls sell mangoes at the prices shown below.

Stall A	Stall B
$9.00 for 6 mangoes	$5.00 for 4 mangoes

What is the **cheaper price** of 36 mangoes between Stall A and Stall B? [2]

For Stall A:

Number of sets $= \frac{36}{6}$

$= 6$ sets

36 mangoes $= \$9.00 \times 6$

$= \$54.00$

For Stall B:

Number of sets $= \frac{36}{4}$

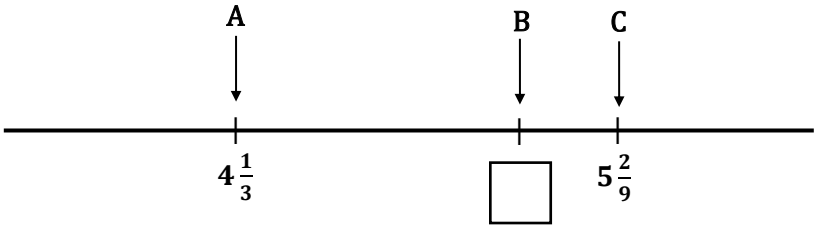
$= 9$ sets

36 mangoes $= \$5.00 \times 9$

$= \$45.00$

Answer $\$$_____ 45 _____

25. The number line below shows the values of A and C.



The length AC is 4 times the length BC. What is the value of B? [3]

Length of AC $= 5\frac{2}{9} - 4\frac{1}{3}$

$= \frac{47}{9} - \frac{13}{3}$

$= \frac{47-39}{9}$

$= \frac{8}{9}$

Length of BC $= \frac{1}{4} \times$ Length of AC

$= \frac{1}{4} \times \frac{8}{9}$

$= \frac{2}{9}$

The value of B $= 5\frac{2}{9} - \frac{2}{9}$

$= 5$

Answer_____ 5 _____

26. An arch was made using 280 balloons. For every 4 red balloons, 3 blue and 7 green balloons were used.

How many blue balloons were used to make the arch? [3]

1 set $= 4 + 3 + 7$

$= 14$ balloons

Number of sets $= \frac{280}{14}$

$= 20$ sets

Each set has 3 blue balloons.

So,

20 sets has $= 20 \times 3$

$= 60$ blue balloons

Answer_____ 60 _____ blue balloons

27. Kai bought sets of jewelry containing rings and bracelets. Each set cost $25 and contained 3 more rings than bracelets. Kai spent a total of $300 and received 24 bracelets.

How many rings were in **each** set? [3]

Cost of 1 set = $25

Number of sets = $\frac{\$300}{\$25}$

= 12 sets

12 sets = 24 bracelets

1 set = $\frac{24}{12}$

= 2 bracelets

Number of rings in 1 set = 3 + 2

= 5 rings

Answer_____ 5 _____ rings

28. David has $150.00 to buy pencils and rulers.

Pencils	Rulers
$1.84 each	$8.13 each

Explain how estimation can be used to determine whether or not David has enough money for 15 pencils and 15 rulers.

Answer:

Pencils = 1.84 Rulers = 8.13

We can approximate to the nearest whole number.

∴ 1 pencil ≈ $2 1 ruler ≈ $8

Total for 1 set = $2 + $8

= $10 (higher than actual)

∴ Number of sets = $\frac{150}{10}$

= 15 sets

Hence, he has the money to buy 15 pencils and 15 rulers.

29. A piece of wire is bent to form a rectangle of width 8 cm. The length of the rectangle is 6 cm longer than the width.

What is the length of wire? [2]

Width of the wire = 8 cm

Length of the wire = 6 cm longer than the width

= 6 + 8

= 14 cm

Now,

Total length of the wire = Perimeter of wire

= 8 + 8 + 14 + 14

= 16 + 28

= 44 cm

Answer_____ 44 _____ cm

30. Phillip plays football every 3 days and cricket every 4 days. He played football and cricket on 5th February.

FEBRUARY						
Sun	Mon	Tue	Wed	Thurs	Fri	Sat
				1	2	3
4	(5)	6	7	8	9	10
11	12	13	14	15	16	17

What will be the next **date** on which Phillip will play **both** football and cricket? [2]

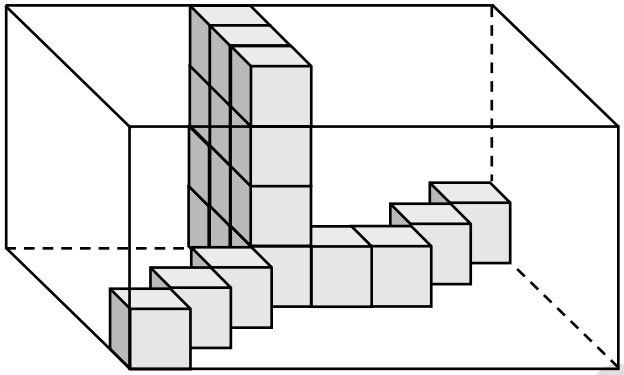
The LCM of 3 and 4 is 12.

Date = 5 + 12

= 17th February

Answer_____ 17th _____ February

31. A box is packed with identical cubes, as shown below.



How many **more** of these cubes are needed to fill the box completely? [3]

Width = 6 cubes Length = 8 cubes Height = 4 cubes

Total = $6 \times 8 \times 4$

= 192 cubes

Number of cubes currently in the box = 20 cubes

Number of missing cubes = $192 - 19$

= 173 cubes

Answer_____ 173 _____ cubes

32. Mervyn started to tile a room at 8:40 a.m. He took 4 minutes to lay each tile. After he laid each set of 30 tiles, he took a 45-minute break. Mervyn laid a total of 90 tiles. At what time did he finish laying all the tiles? [3]

1 break = 45 minutes

2 breaks = 45 × 2

= 90 minutes

Time taken to lay the 90 tiles = 4 × 90

= 360 minutes

Total time taken with breaks = 90 + 360

= 450 minutes

$= \frac{450}{60}$ hours

= 7 hours and 30 minutes

Time at which he finished laying all the tiles = 8 : 4 0

\+ 7 : 3 0

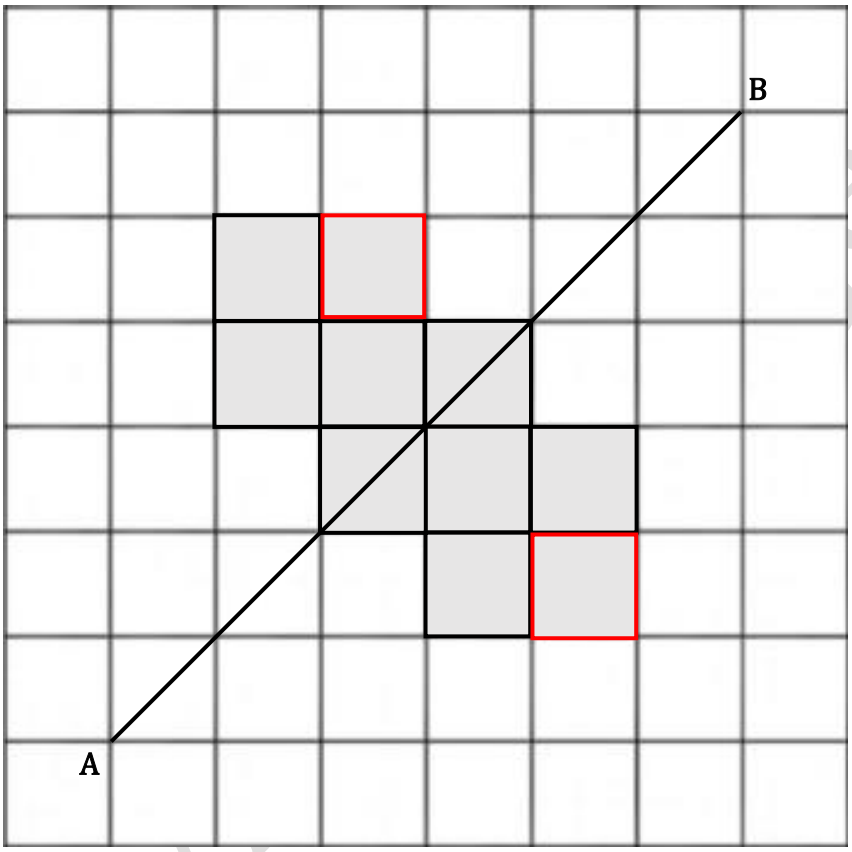
1 6 : 1 0

\− 1 2 : 0 0

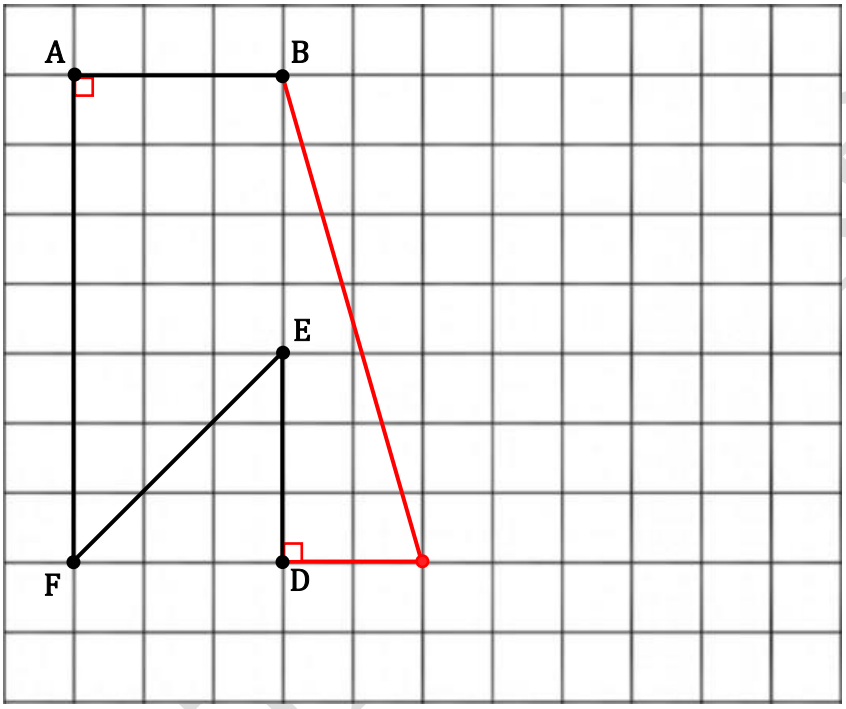
4 : 1 0

Answer_____ 4:10 _____ p.m.

33. In the diagram below, AB is a line of symmetry. Shade 2 squares to complete the symmetrical shape. [2]



34. An incomplete hexagon ABCDEF, is shown on the grid below. Insert the point C on the grid such that the hexagon has two right angles, and draw lines to complete the hexagon. [2]



35. Olivia scored 86, 90 and 70 on three tests. She can earn a Grade A if her **mean** score is at least 80.

What is the **lowest** score she can obtain on the fourth test to earn a Grade A? [2]

Total for Grade A = Mean × four tests

= 80 × 4

= 320

So far = 86 + 90 + 70

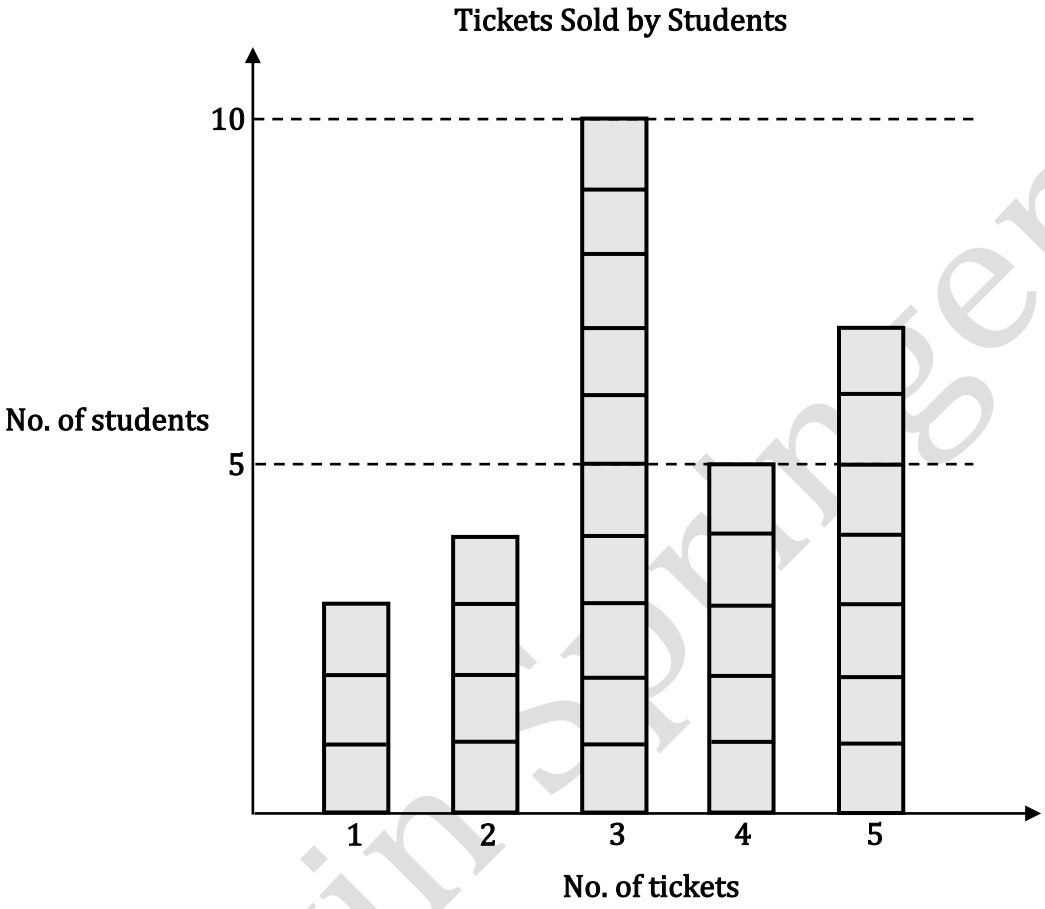
= 246

She needs = 320 − 246

= 74

Answer_____ 74 _____

36. The block graph below shows the number of tickets sold by students at a school.



How many students sold **at least** 3 tickets? [3]

Number of students who sold at least 3 tickets = 10 + 5 + 7

= 22 students

Answer_____ 22 _____ students

SECTION III

37. The cost of 1 bag, 1 book and 1 pen is \$45. Alex bought 1 bag, 1 book and 2 pens and paid a total of \$51. The cost of 1 bag is **twice** the cost of 1 book.

What is the cost of 1 bag? [4]

Cost of 1 bag, 1 book and 1 pen = \$45

Cost of 1 bag, 1 book and 2 pens = \$51

Cost of 1 pen = \$51 − \$45

= \$6

Cost of 1 bag and 1 book = \$45 − \$6

= \$39

The cost of 1 bag is twice the cost of 1 book.

Hence, we can say that the cost of 1 bag and 1 book is equivalent to the cost of 3 books.

Cost of 3 books = \$39

Cost of 1 book = $\frac{\$39}{3}$

= \$13

Cost of 1 bag $= 2 \times$ Cost of 1 book

$= 2 \times \$13$

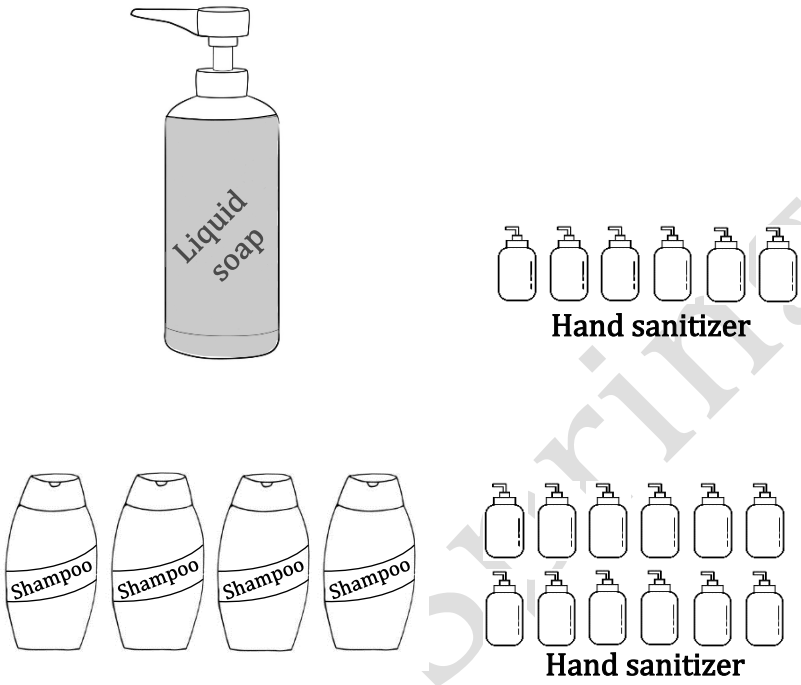
$= \$26$

$\therefore$ The cost of 1 bag is \$26.

Answer \$_____ 26 _____

38. One bottle of liquid soap has the same capacity as 6 bottles of hand sanitizer.

Four bottles of shampoo have the same capacity as 12 bottles of hand sanitizer.



The capacity of 1 bottle of liquid soap is 1.5 litres.

What is the capacity of 1 bottle of shampoo, in millilitres? [4]

Capacity of 1 bottle of liquid soap = 1.5 litres

= 1.5 × 1000 ml

= 1500 ml

One bottle of liquid soap has the same capacity as 6 bottles of hand sanitizer.

6 bottles of hand sanitizer = 1500 ml

1 bottle of hand sanitizer = $\frac{1500}{6}$

= 250 ml

Capacity of 4 bottles of shampoo = Capacity of 12 bottles of hand sanitizer

Hence,

Capacity of 1 bottle of shampoo = Capacity of 3 bottles of hand sanitizer

= 3 × 250

= 750 ml

Answer_____ 750 _____ ml

39. Lollipop sticks are used to form a geometrical pattern, as shown below. [4]

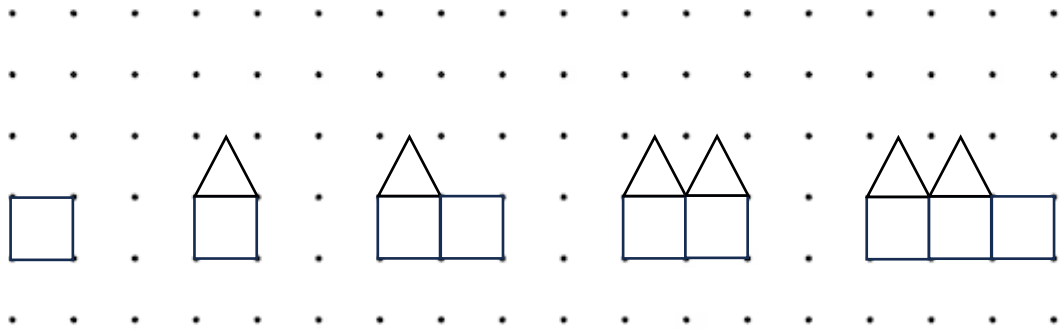


Figure 1 **Figure 2** **Figure 3** **Figure 4** **Figure 5**

(a) Complete the table below by writing the number of lollipop sticks that will form Figure 4 and Figure 9.

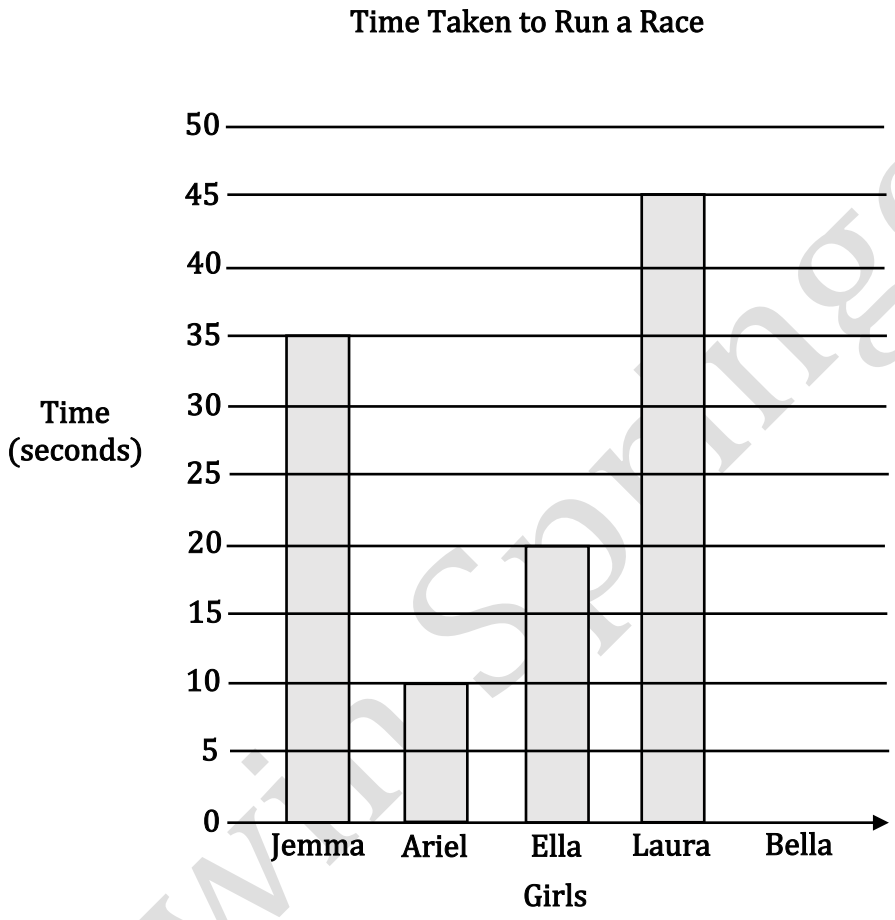
Figure	1	2	3	4	5	6	7	8	9	10
No. of lollipop sticks	4	6	9	11	14	16	19	21	24	26

Notice that the number of lollipop sticks is increasing by 2 and then by 3.

(b) Describe the pattern rule.

Answer: The patterns starts with 4 sticks, then adds 2 sticks for the next figure, then +3 sticks for the next figure. The pattern repeats with +2, then +3 for the remaining figures.

40. The incomplete bar graph below shows the time, in seconds, taken by 5 girls to run a race. The average time taken by the 5 girls to run the race was 25 seconds. [4]



(a) Calculate the time taken by Bella to run the race.

Time taken by Jemma = 35 seconds

Time taken by Ariel = 10 seconds

Time taken by Ella = 20 seconds

Time taken by Laura = 45 seconds

Time taken by Jemma, Ariel, Ella and Laura $= 35 + 10 + 20 + 45$

$= 110$ seconds

The average time taken by the 5 girls to run the race was 25 seconds.

Total time taken by the 5 girls $= 5 \times 25$

$= 125$ seconds

Now,

Time taken by Bella $= 125 - 110$

$= 15$ seconds

Answer_____ 15 _____ seconds

(b) What was the time taken by the **fastest** runner?

The fastest runner is Ariel because she took the least amount of time to run the race.

Ariel took 10 seconds to run the race.

Answer_____ 10 _____ seconds