

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.

95 367

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.

$$\begin{array}{c}
 > & = & < \\
 8\ 693 & \boxed{>} & 8\ 639
 \end{array}$$

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

$$\begin{aligned} 7 - \frac{2}{3} &= 6 + 1 - \frac{2}{3} \\ &= 6 + \frac{3}{3} - \frac{2}{3} \\ &= 6 + \frac{1}{3} \\ &= 6\frac{1}{3} \end{aligned}$$

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.  $3.12 \times 4 =$

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

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

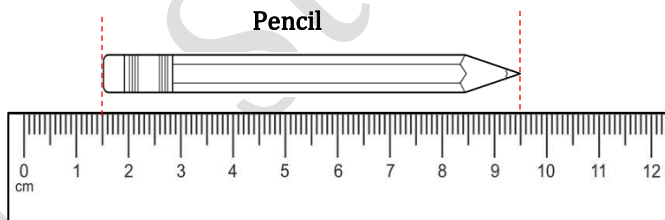
What is the missing element in the pattern?

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?

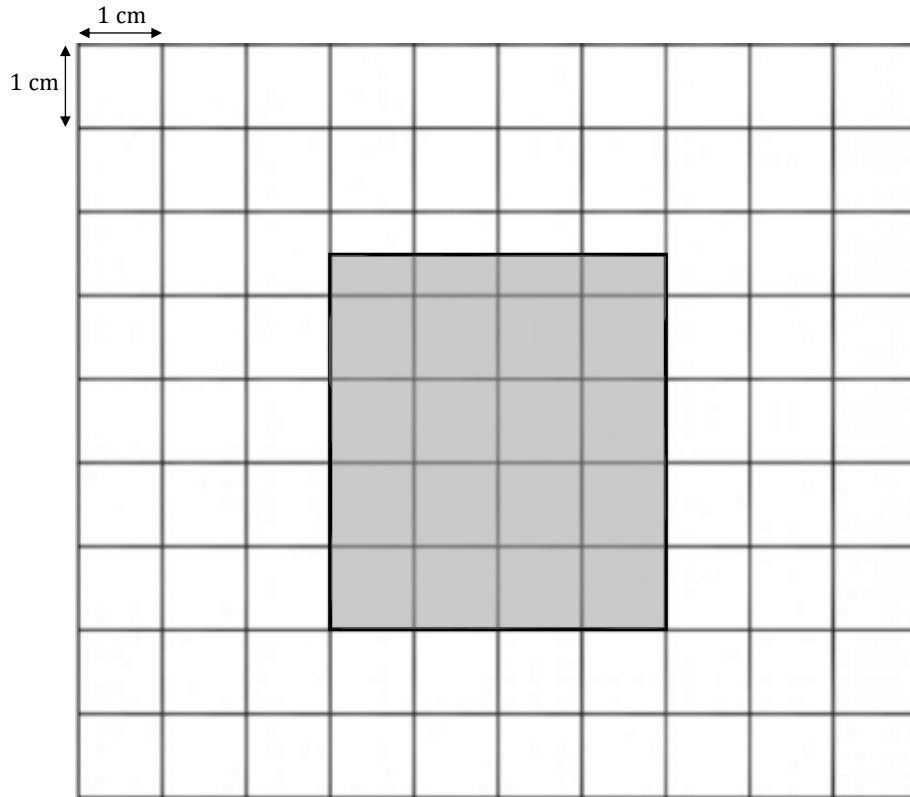
Length of journey = 7 : 25

$$\begin{array}{r} - 6 : 45 \\ \hline 0 : 40 \\ \hline \end{array}$$

Answer \_\_\_\_\_ 40 \_\_\_\_\_ minutes

The Student Hub

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

$$\text{Area of 1 square} = s \times s$$

$$= 1 \times 1$$

$$= 1 \text{ cm}^2$$

$$\text{Area of 18 squares} = 18 \times 1$$

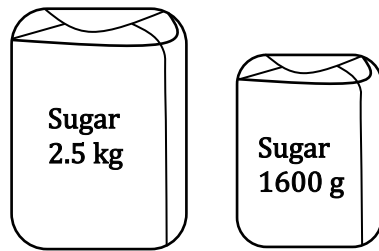
$$= 18 \text{ cm}^2$$

Answer \_\_\_\_\_ **18** \_\_\_\_\_  $\text{cm}^2$

The Student Hub



14. Two packs of sugar are shown below.



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

$$1 \text{ kg} = 1000 \text{ g}$$

$$2.5 \text{ kg} = 2.5 \times 1000$$

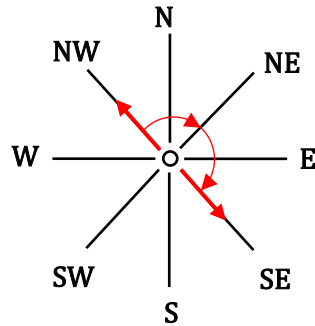
$$= 2500 \text{ g}$$

$$\text{Difference} = 2500 - 1600$$

$$= 900 \text{ g}$$

Answer \_\_\_\_\_ **900** \_\_\_\_\_ g

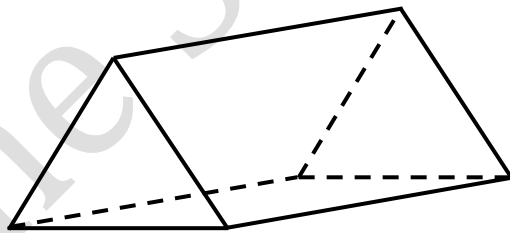
15. Gillian is standing at O and facing NW. She makes quarter turns and is now facing SE.



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

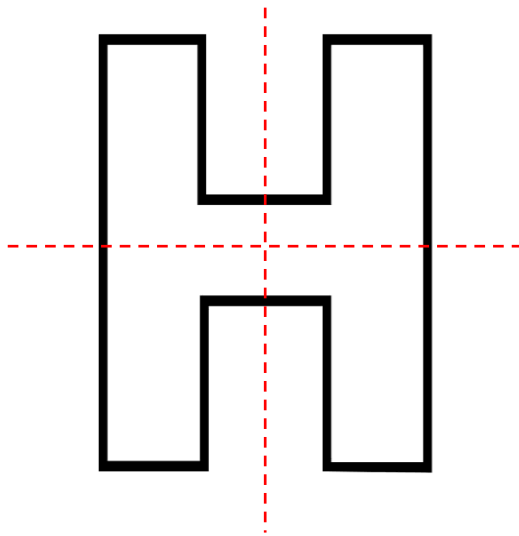
Answer \_\_\_\_\_ **2** \_\_\_\_\_ quarter turns

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?

$$\begin{aligned} \text{Total} &= 3 \times 12 \\ &= 36 \end{aligned}$$

$$\begin{aligned} \text{So far, the sum of the numbers is} &= 10 + 11 \\ &= 21 \end{aligned}$$

$$\begin{aligned} \text{Missing number} &= 36 - 21 \\ &= 15 \end{aligned}$$

Answer \_\_\_\_\_ 15 \_\_\_\_\_

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

**Gift Students Received**

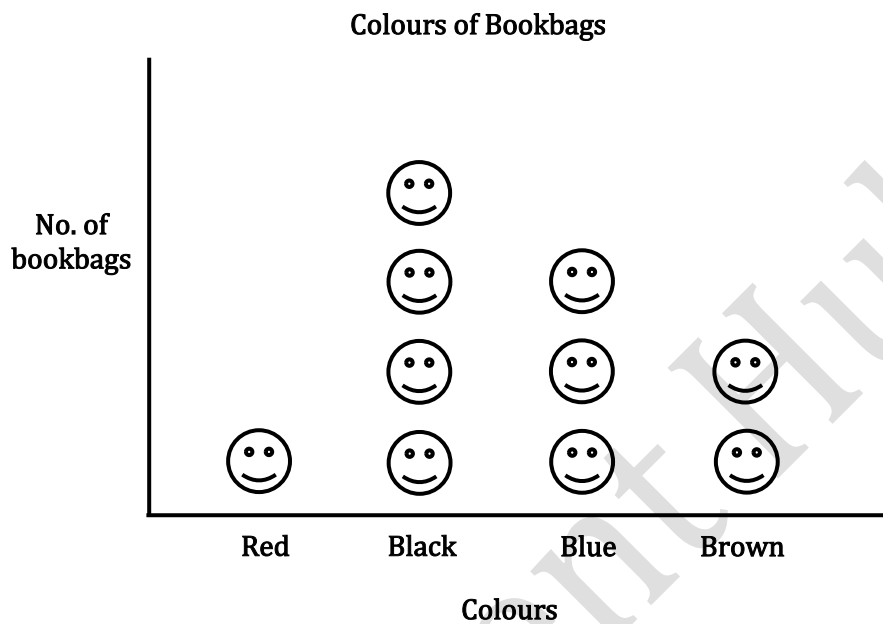
Gift	Tally
Bicycles	
Books	
Cellphones	
Tablets	

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?

$$4 \text{ smiley faces} = 32$$

$$1 \text{ smiley face} = \frac{32}{4}$$

$$= 8 \text{ bags}$$

Hence,

$$\text{Number of blue bags} = 3 \times 8$$

$$= 24 \text{ blue bags}$$

Answer \_\_\_\_\_ **24** \_\_\_\_\_ bookbags

SECTION II

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

[2]

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

$$= 24$$

Consider R.H.S.

$$\square^2 - 1 = 24$$

$$\square^2 = 24 + 1$$

$$\square^2 = 25$$

$$\square = \sqrt{25}$$

$$\square = 5$$

Answer  $\square =$  \_\_\_\_\_ 5 \_\_\_\_\_

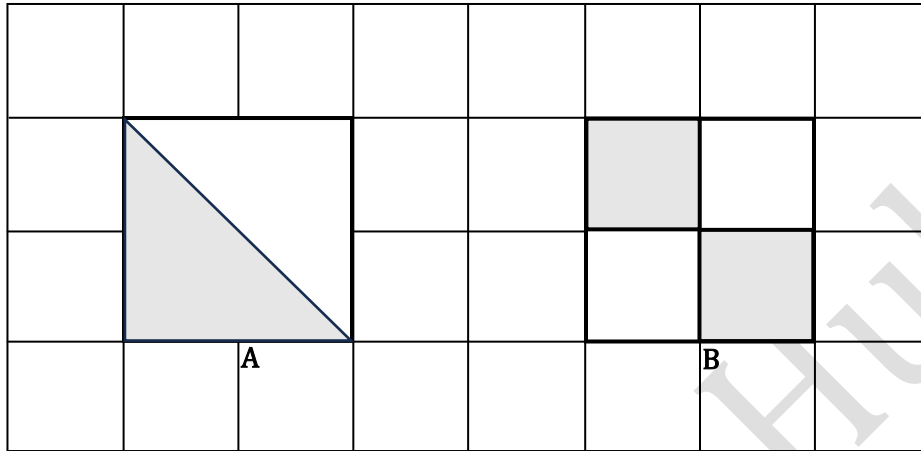
22. A packet of sweets was shared among 4 students. Each student received 15 sweets and there were 5 sweets remaining.

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

$$\begin{aligned}\text{Number of sweets in the packet} &= (15 \times 4) + 5 \\ &= 60 + 5 \\ &= 65 \text{ sweets}\end{aligned}$$

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:

$$\begin{aligned} \text{Number of sets} &= \frac{36}{6} \\ &= 6 \text{ sets} \end{aligned}$$

$$\begin{aligned} 36 \text{ mangoes} &= \$9.00 \times 6 \\ &= \$54.00 \end{aligned}$$

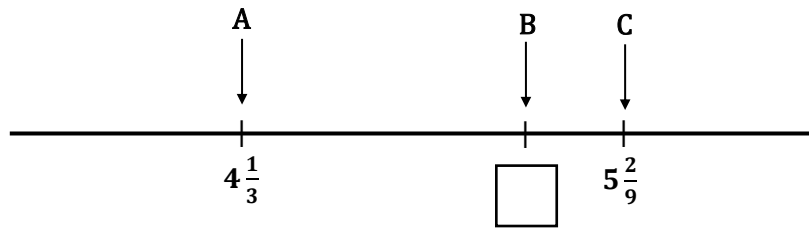
For Stall B:

$$\begin{aligned} \text{Number of sets} &= \frac{36}{4} \\ &= 9 \text{ sets} \end{aligned}$$

$$\begin{aligned} 36 \text{ mangoes} &= \$5.00 \times 9 \\ &= \$45.00 \end{aligned}$$

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]

$$\begin{aligned} \text{Length of AC} &= 5\frac{2}{9} - 4\frac{1}{3} \\ &= \frac{47}{9} - \frac{13}{3} \\ &= \frac{47-39}{9} \\ &= \frac{8}{9} \end{aligned}$$

$$\begin{aligned} \text{Length of BC} &= \frac{1}{4} \times \text{Length of AC} \\ &= \frac{1}{4} \times \frac{8}{9} \\ &= \frac{2}{9} \end{aligned}$$

$$\begin{aligned} \text{The value of B} &= 5\frac{2}{9} - \frac{2}{9} \\ &= 5 \end{aligned}$$

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]

$$\begin{aligned} 1 \text{ set} &= 4 + 3 + 7 \\ &= 14 \text{ balloons} \end{aligned}$$

$$\begin{aligned} \text{Number of sets} &= \frac{280}{14} \\ &= 20 \text{ sets} \end{aligned}$$

Each set has 3 blue balloons.

So,

$$\begin{aligned} 20 \text{ sets has} &= 20 \times 3 \\ &= 60 \text{ blue balloons} \end{aligned}$$

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]

$$\text{Cost of 1 set} = \$25$$

$$\begin{aligned} \text{Number of sets} &= \frac{\$300}{\$25} \\ &= 12 \text{ sets} \end{aligned}$$

$$12 \text{ sets} = 24 \text{ bracelets}$$

$$\begin{aligned} 1 \text{ set} &= \frac{24}{12} \\ &= 2 \text{ bracelets} \end{aligned}$$

$$\begin{aligned} \text{Number of rings in 1 set} &= 3 + 2 \\ &= 5 \text{ rings} \end{aligned}$$

Answer \_\_\_\_\_ 5 \_\_\_\_\_ rings

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

<b>Pencils</b> <b>\$1.84 each</b>
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<b>Rulers</b> <b>\$8.13 each</b>
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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

$$= 6 + 8$$

$$= 14 \text{ cm}$$

Answer \_\_\_\_\_ 14 \_\_\_\_\_ cm

30. Phillip plays football every 3 days and cricket every 4 days. He played football and cricket on 5<sup>th</sup> 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]

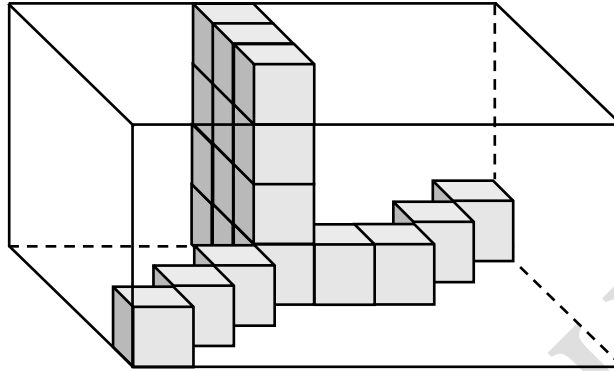
The LCM of 3 and 4 is 12.

Date = 5 + 12

= 17<sup>th</sup> February

Answer \_\_\_\_\_ 17<sup>th</sup> \_\_\_\_\_ 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 =  $192 - 20$   
= 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]

$$1 \text{ break} = 45 \text{ minutes}$$

$$2 \text{ breaks} = 45 \times 2$$

$$= 90 \text{ minutes}$$

$$\text{Time taken to lay the 90 tiles} = 4 \times 90$$

$$= 360 \text{ minutes}$$

$$\text{Total time taken with breaks} = 90 + 360$$

$$= 450 \text{ minutes}$$

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

$$= 7 \text{ hours and } 30 \text{ minutes}$$

$$\text{Time at which he finished laying all the tiles} = 8 : 40$$

$$+ \quad 7 : 30$$

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$$16 : 10$$

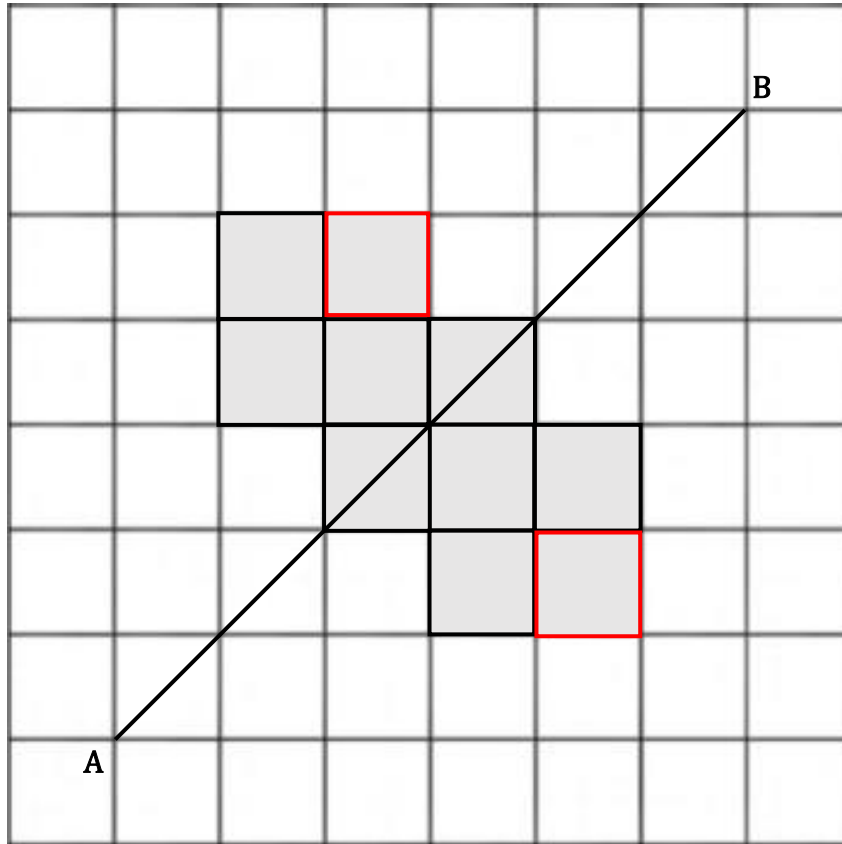
$$- \quad 12 : 00$$

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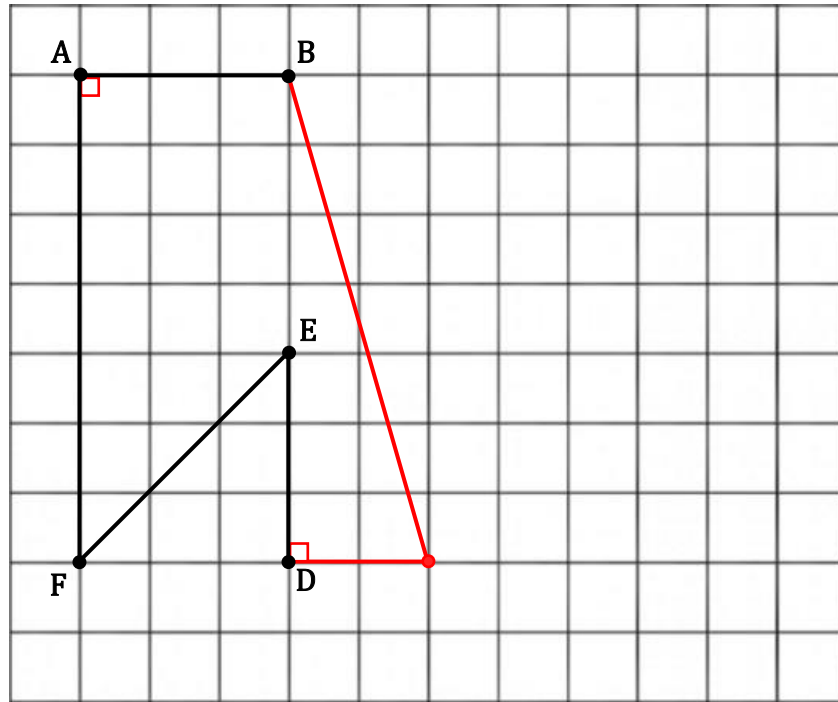

$$4 : 10$$

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  $\times$  four tests

$$= 80 \times 4$$

$$= 320$$

So far =  $86 + 90 + 70$

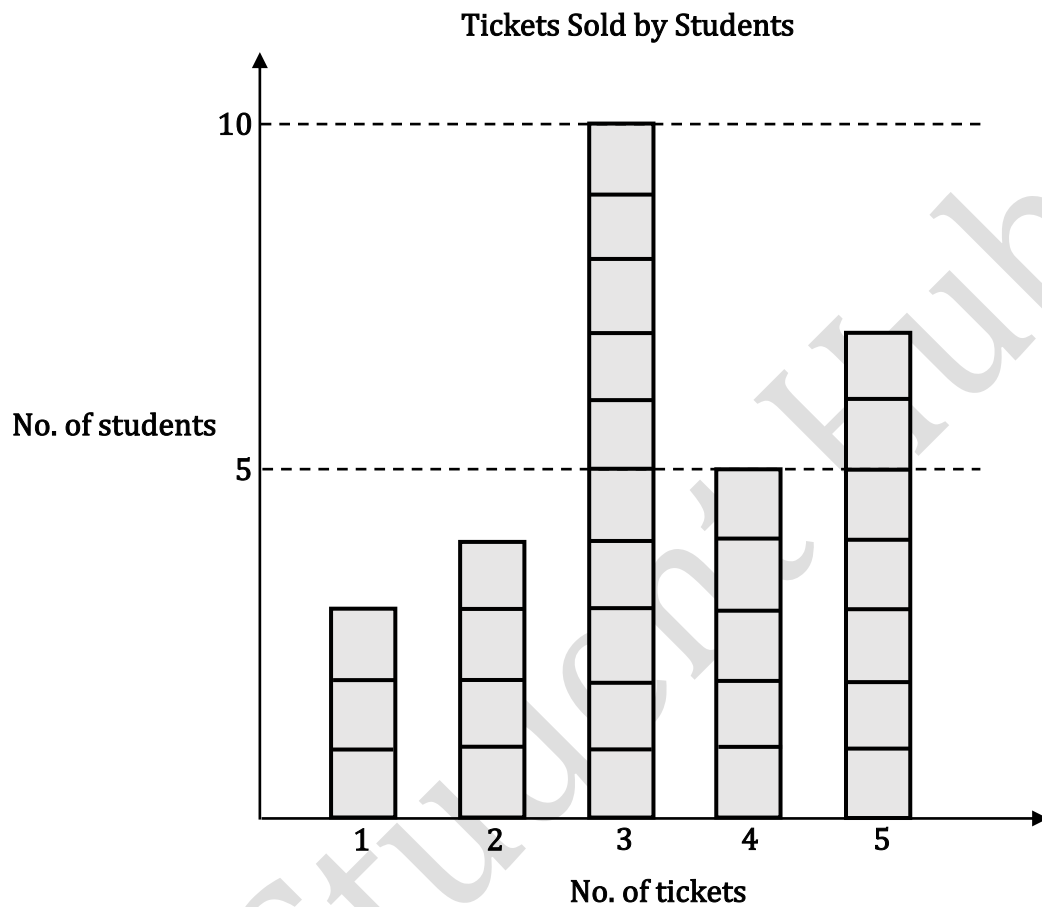
$$= 246$$

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]

$$\begin{aligned} \text{Number of students who sold at least 3 tickets} &= 10 + 5 + 7 \\ &= 22 \text{ students} \end{aligned}$$

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]

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

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

$$\begin{aligned} \text{Cost of 1 pen} &= \$51 - \$45 \\ &= \$6 \end{aligned}$$

$$\begin{aligned} \text{Cost of 1 bag and 1 book} &= \$45 - \$6 \\ &= \$39 \end{aligned}$$

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.

$$\text{Cost of 3 books} = \$39$$

$$\begin{aligned} \text{Cost of 1 book} &= \frac{\$39}{3} \\ &= \$13 \end{aligned}$$

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

$$= 2 \times \$13$$

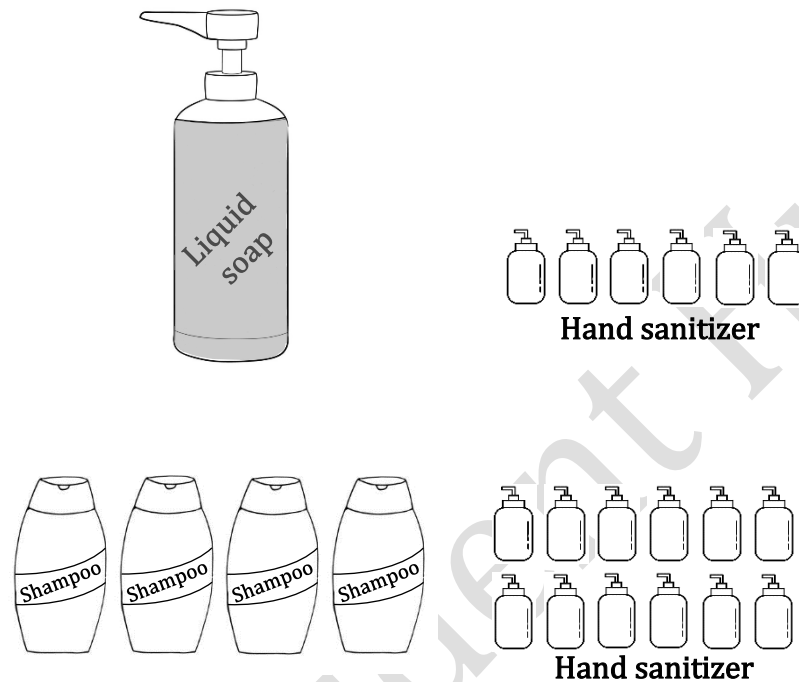
$$= \$26$$

$\therefore$  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

$$= 1.5 \times 1000 \text{ ml}$$

$$= 1500 \text{ ml}$$

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



6 bottles of hand sanitizer = 1500 ml

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

$$= 250 \text{ ml}$$

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

$$= 3 \times 250$$

$$= 750 \text{ ml}$$

Answer \_\_\_\_\_ 750 \_\_\_\_\_ ml

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

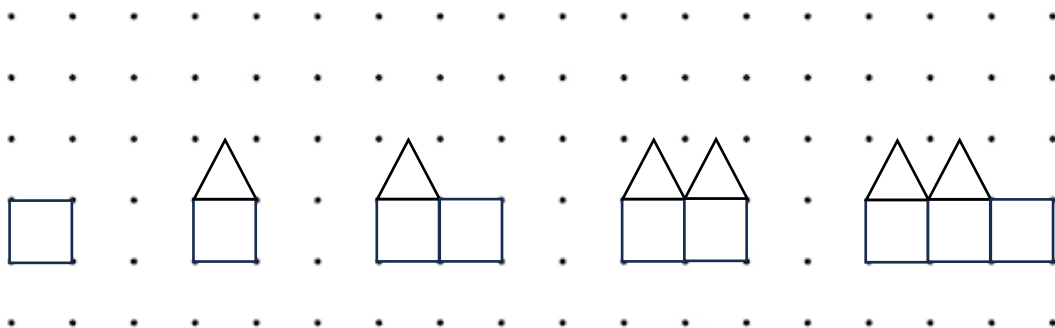


Figure 1

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.

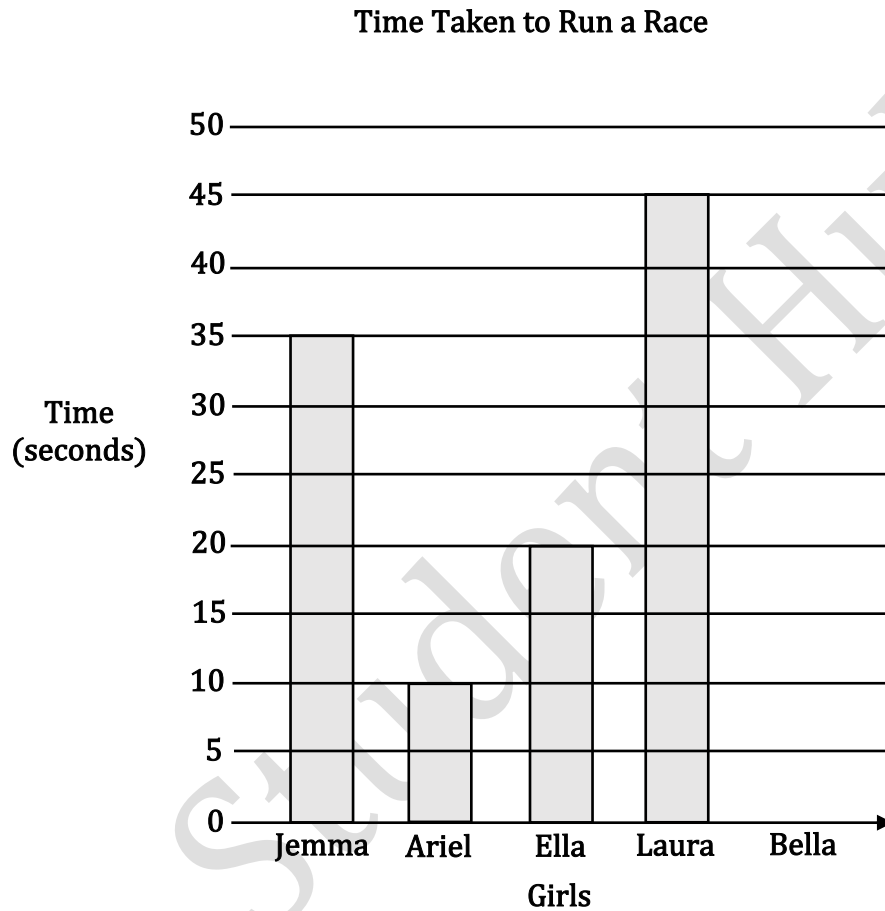
Figure	1	2	3	4	5	6	7	8	9	10
No. of lollipop sticks	4	6	9	<u>11</u>	<u>14</u>	<u>16</u>	<u>19</u>	<u>21</u>	<u>24</u>	26

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

$$\begin{aligned}\text{Time taken by Jemma, Ariel, Ella and Laura} &= 35 + 10 + 20 + 45 \\ &= 110 \text{ seconds}\end{aligned}$$

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

$$\begin{aligned}\text{Total time taken by the 5 girls} &= 5 \times 25 \\ &= 125 \text{ seconds}\end{aligned}$$

Now,

$$\begin{aligned}\text{Time taken by Bella} &= 125 - 110 \\ &= 15 \text{ seconds}\end{aligned}$$

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