Session 2   **Total: 75 marks**

SECTION I

1. Complete the place value chart below to represent the numeral eighty-five thousand, three hundred and seven.   [1]

Tens of Thousands	Thousands	Hundreds	Tens	Ones
8	5	3	0	7

2. Write a whole number in the box below to make the statement true.

Solution:

The question is asking us to enter a figure into the equation that would generate an answer that is to be greater than 4 875. We can subtract 4 837 from 4 875 to understand the lowest possible number which 1 can be added to that would give us a correct answer.

4 875 – 4 837 = 38

Therefore, the answer can be any number greater than 38.

4 837   + | 39 | >   4875

3. What number is represented by [1]

$$(7 \times 100) + (3 \times 10) + \left(5 \times \frac{1}{100}\right)?$$

Solution:

$(7 \times 100) + (3 \times 10) + \left(5 \times \frac{1}{100}\right)$

700 + 30 + 0.05

H	T	0	Ths	Hths
7	0	0.		
	3	0.		
		0.	0	5
7	3	0.	1	5

Answer $= 730.05$

4. Emilio bought a new videogame using the 6 bills below. The cost of the videogame was $176. Write the missing values on the bills. [1]

$100	$50	$5

$ 10	$10	$1

Solution:

The missing values $=$ *cost of the videogame – the sum of the 4 known bills*

$= \$176 - (100 + 50 + 5 + 1)$

$= \$176 - \$156$

$= \$20$

Since there are two available bills, we divide the $20 by 2 giving us $10 each.

Answer $= \$10$ and $\$10$

5. The total number of students living in central Trinidad is 9 285. Estimate the number of students to the nearest thousand. [1]

Solution:

When rounding a number to the nearest thousand, the most important figure that we must look at is the **HUNDREDS.** Once that figure is 5 or more, then we round it up to the next thousand. If it is 4 or less, then we round it down to the lower thousand. For example:

Th	H	T	O
9	2	8	5

For the question, the hundreds figure in 9 285 is 2, which is less than 5. Therefore, we round it down to the previous thousand.

Answer = 9000

6. Azzarah collected 96 toys in her toy drive for the less fortunate. She was able to distribute $\frac{7}{8}$ of the toys at the Christmas party.
How many toys did she give out? [1]

Solution:

The number of toys given out $= \frac{7}{8} \; x \; 96$

$= 84$ toys

Answer = 84 toys

7. What is the value of $9^2 - \sqrt{36}$? [1]

$9^2 = 9 \times 9 = 81$

$\sqrt{36} = 6$

$9^2 - \sqrt{36} = 81 - 6$

$\qquad = 75$

Answer $= 75$

8. Aidan gave away $\frac{7}{12}$ of his Pokémon cards and was left with 95 cards.

How much Pokémon cards did he have initially? [1]

First, we need to find the equivalent fraction for the remaining 98 Pokémon cards that Aidan had left.

$\frac{12}{12} - \frac{7}{12} = \frac{5}{12}$

If $\frac{5}{12} = 95$ Pokémon cards , then $\frac{1}{12} = \frac{95}{5} = 19$ Pokémon cards

Therefore, $\frac{12}{12} = 19$ Pokémon cards $\times 12 = 228$ Pokémon cards

Answer $= 228$ Pokémon cards

9. What is the value of $9 - \frac{3}{5}$? [1]

Solution:

$8 + \frac{5}{5} - \frac{3}{5} = 8 + \frac{2}{5}$

$\qquad = 8\frac{2}{5}$

Answer $= 8\frac{2}{5}$

10. Write the correct value in the box.   [1]

$$24 \times 12 = (15 \times 12) + (\boxed{9} \times 12)$$

Solution:

In the first bracket, we already multiply 12 by 15 times. Therefore, we need to find the remaining number of times we need to multiply it by to make 24.

Answer = 24 – 15 = 9 times

11. Arrange the values below in descending order   [1]

40%, $\frac{4}{5}$,   0.60

Solution:

We need to convert the figures to similar conversions to compare - either percentages, fractions or decimals. Also, we must note that descending order is from largest to smallest.

Percentage	Decimal	Fraction
40%	0.40	$\frac{2}{5}$
60%	0.60	$\frac{3}{5}$
80%	0.80	$\frac{4}{5}$
100%	1.0	$\frac{5}{5}$

Answer = $\frac{4}{5}$,   0.60,   40%

12. The snack break at the pre-school occurs at the time shown on the clock below.
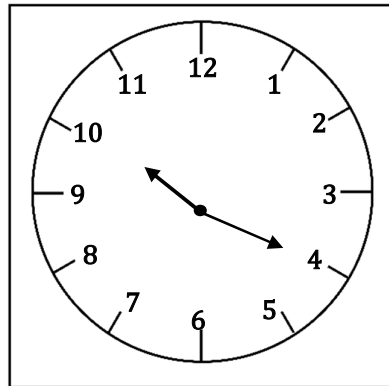
What time is the snack break? [1]

The time shows 20 minutes after ten o'clock

Answer: 10:20 am

13. An incomplete calendar is given below.

APRIL						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2		

What day of the week is the 2nd of May? [1]

April has 30 days.

Answer: The 2nd of May will be on a Thursday.

14. How many of the juice boxes shown below are needed to fill the jug?   [1]

Apple
Juice
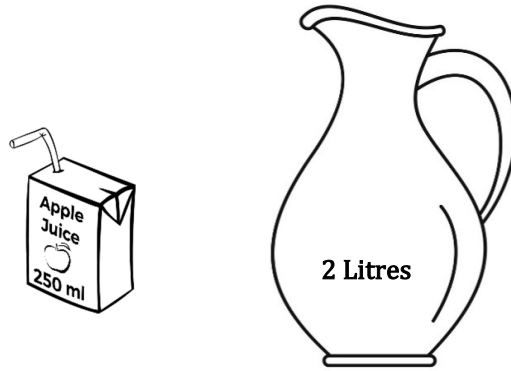
250 ml

2 Litres

Solution:

$1000 \text{ ml} = 1 \text{ litre}$

$2 \text{ litres} = 2 \times 1000 \text{ ml} = 2000 \text{ ml}$

Number of juice boxes needed $= \dfrac{2000 \text{ ml}}{250 \text{ ml}} = 8$ juice boxes

Answer $= 8$ juice boxes

15. The shape below is drawn on a 1cm grid.
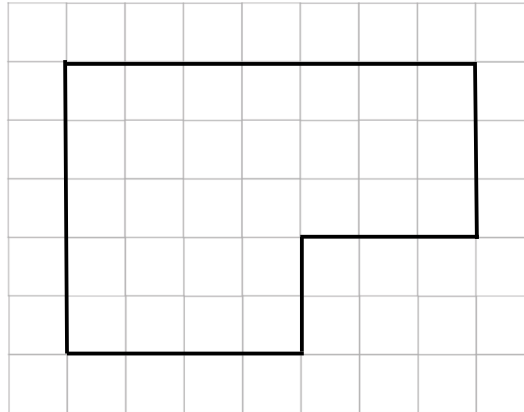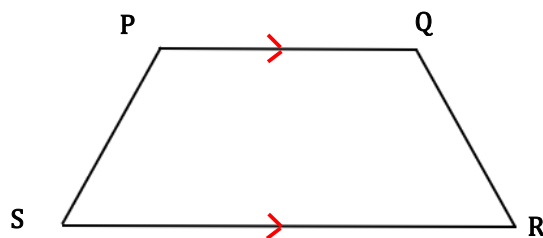

Calculate the perimeter of the shape. [1]

16. In the trapezium PQRS shown below, which side is parallel to SR? [1]
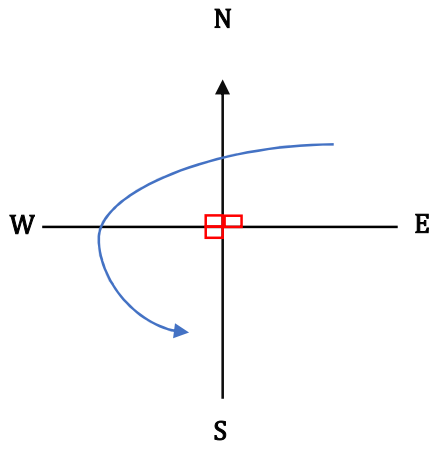
17. Draw all lines of symmetry on the shape below.   [1]
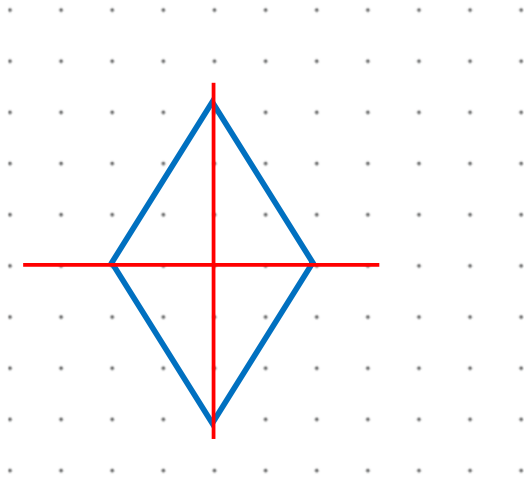
18. Wafa was standing facing east. She turned anticlockwise and is now facing south.

N

W — E

S

How many quarter turns did Wafa make?   [1]

Answer: 3 quarter turns

19. The assignment scores of 12 students are shown below.

24	24	25	26
25	27	24	25
25	27	26	25

Which score represents the mode?   [1]

20. The incomplete tally chart below shows the 4 types of pets students own.

Type of Pet	Tally	Number
Dog	|||| ||||		11
Rabbit	||||	5
Cat	|||| ||	7
Fishes	|||	3

Complete the tally chart to show the number of students who are the owners of

a cat.   [1]

SECTION II

21. Express $\dfrac{5}{24} \times \dfrac{12}{25}$ in its lowest form. [2]

Solution

$$\dfrac{\overset{1}{\cancel{5}}}{\underset{2}{\cancel{24}}} \times \dfrac{\overset{1}{\cancel{12}}}{\underset{5}{\cancel{25}}} = \dfrac{1 \times 1}{2 \times 5}$$

$$= \dfrac{1}{10}$$

Answer: $\dfrac{1}{10}$ in its lowest terms

22. Write the correct value in the box to complete the number sentence. [2]

$$4 + \dfrac{2}{5} = 9 - \boxed{4\,\dfrac{3}{5}}$$

Solution

$4 + \dfrac{2}{5} = 4\,\dfrac{2}{5}$
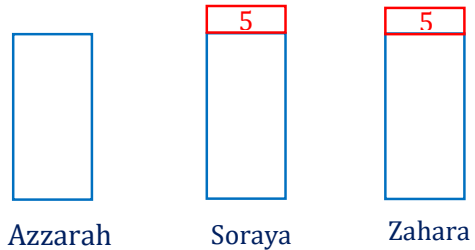
$4\,\dfrac{2}{5} = 9 - \boxed{}$

$9 - 4\,\dfrac{2}{5} = \boxed{}$

$9 - 4\,\dfrac{2}{5} = 8\,\dfrac{5}{5} - 4\,\dfrac{2}{5}$

$$= 4\,\dfrac{3}{5}$$

Answer: $4\,\dfrac{3}{5}$

23. Soraya, Zahara and Azzarah shared $145 among themselves. Soraya and Zahara received an equal amount of money and Azzarah received $5 less. How much money did Zahara receive? [2]

Solution

Azzarah   Soraya   Zahara

Excess $= \$5 + \$5$

$\quad\quad = \$10$

Remove excess $= \$145 - \$10$

$\quad\quad\quad\quad\quad = \$135$

One part $= \dfrac{\$135}{3}$

$\quad\quad\quad = \$45$

Amount Zahara received $= 1$ part $+ \$5$

$\quad\quad\quad\quad\quad\quad\quad\quad = \$45 + \$5$

$\quad\quad\quad\quad\quad\quad\quad\quad = \$50$

Answer: Zahara received $50

24. What is the sum of the five **smallest composite** numbers? [2]
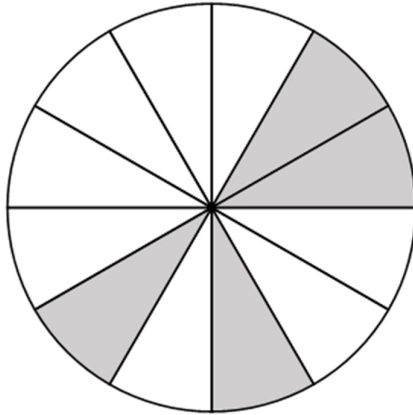
Solution

The five smallest composite numbers are 4, 6, 8, 9 and 10.

$4 + 6 + 8 + 9 + 10 = 37$

Answer: 37

25. On the pie chart shown below, 4 sections are shaded.

How many more sections must be shaded for 75% of the pie chart to

be shaded?   [2]

Solution

The pie chart has 12 sections.

The number of sections to be shaded is:

75% of $12 = \frac{75}{100} \times 12$

$\qquad\quad = \frac{3}{4} \times \frac{12}{1}$

$\qquad\quad = 9$

So, 9 sections must be shaded.

4 sections are already shaded.

So, to have 75% shaded sections we need to shade 9 – 4 = 5 more.

Answer: 5 sections

26. Marcus spent $\frac{1}{2}$ of his monthly salary on rent and groceries, he then placed $\frac{1}{2}$ of the remaining money in a savings account. He now has $1250.00 remaining. What is Marcus total monthly salary? [3]

Solution

Fraction spent from monthly salary $= \frac{1}{2}$

Remaining fraction after spending $= 1 - \frac{1}{2}$

$$= \frac{1}{2}$$

Fraction placed in a savings account $= \frac{1}{2} \times \frac{1}{2}$

$$= \frac{1}{4}$$

Fraction of Marcus's monthly salary that was spent and saved $= \frac{1}{2} + \frac{1}{4}$

$$= \frac{3}{4}$$

So, the fraction he now has remaining $= 1 - \frac{3}{4}$

$$= \frac{1}{4}$$

But Marcus has $1250 remaining.

Therefore, one quarter $(\frac{1}{4})$ of Marcus's monthly salary $= \$1250$

Marcus's total monthly salary $= \$1250 \times 4$

$$= \$5000$$

Answer: $5000

27. Insert the possible values of the missing digits to complete the operation.   [3]

```
      9  □    1   2
  +      □    □   1
  ─────────────────
     10  6    4   3
  ─────────────────
```

Solution

The tens digit: $1 + \boxed{3} = 4$

The hundreds digit must comprise two digits that add to 16. This is because the thousands digit is 10 and so the hundreds sum to 16.

16 hundreds = 1 thousand + 6 hundreds.

```
      9     9      1      2
  +         7      3      1
  ──────────────────────────
     10     6      4      3
  ──────────────────────────
   9+1=10  9+7=16  1+3=4  2+1=3
```

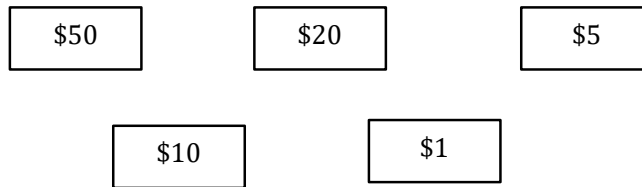We could also have used 8 and 8 instead of 9 and 7. Also, we could have interchanged the position of the digits.

Answer:

```
      9   9    1   2                    9   8    1   2
  +       7    3   1        OR    +          8    3   1
  ─────────────────                 ─────────────────
     10   6    4   3                   10   6    4   3
  ─────────────────                 ─────────────────
```

28. Shania wants to purchase a phone case priced at $106.00 and a screen protector priced at $90.00. She can use any number of each bill shown below to the pay the exact amounts.

$50		$20		$5

	$10		$1	

Which of the 2 items can be purchased using the fewer number of bills? Explain your answer. [3]

Solution

To pay $106 Shania may use

$2 \times \$50$
$1 \times \$5$ Total 4 bills
$1 \times \$1$

To pay $90 Shania may use

$1 \times \$50$
$2 \times \$20$ Total 3 bills

Answer: So, Shania can pay $90 by using only 3 bills.

29. To strengthen their creative writing skills each day Kyle decided to learn 3 new words and Arion learnt 2 more words than Kyle. They learnt 120 new words altogether during the same number of days. For how many days did they study new words? [2]

Solution

In one day, Kyle learns 3 words.

In one day, Arion learns $3 + 2 = 5$ words.

So, together they learnt $3 + 5 = 8$ words per day.

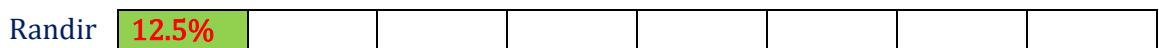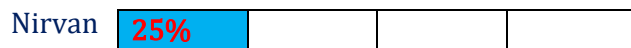If they learnt 120 words in total, then the number of days that they learnt words will be:

$120 \div 8 = 15$

Answer: 15 days

30. Twenty-five per cent of Nirvan's weekly allowance is equal to 12.5% of Randir's weekly allowance.

What fraction of their weekly allowance belongs to Randir? [2]

Solution

Nirvan	25%			

Randir	12.5%							

The total allowance can be represented by 12 equal parts, with Randir having 8 out of 12.

Hence, Randir has $\frac{8}{12} = \frac{2}{3}$ of the total allowance

Answer: $\frac{2}{3}$

31. Safa began her mathematics revision at 10:40 a.m. She revised for 3 hours and 15 minutes. What time did she complete her revision?　　　　　　　　[2]

Solution

We need to add 3 hours and 15 minutes to 10:40 a.m.

Hours	Minutes
10	40
3	15
13	55

We can interpret 13:55 as 1 hours and 55 minutes past 12:00 noon or 1:55 p.m.

Answer: 1:55 p.m.

32. Giselle and Shana wanted to try the zipline trolley together on their vacation. Their respective masses are 95.2 kg and 102 kg 400 g and the total mass allowed on the zipline trolley was 193.5 kg.

By how many kilograms were their combined mass over the mass allowed?　　[3]

Solution

Mass Giselle is 95.2 kg.

Mass of Shana is 102 kg 400g, we need to convert this to kg.

Using the conversion:

$1000g = 1 \text{ kg}$

Converting g to kg we divide by 1000:

$400 \div 1000 = 0.4 \text{ kg}$

Dividing by 1000 so we move the decimal point 3 spaces to the left

.400.

The mass of Shana is $102 \text{ kg} + 0.4 \text{ kg} = 102.4 \text{ kg}$

TOTAL mass of Giselle and Shana = Mass of Giselle + Mass of Shana

$$= 95.2 \text{ kg} + 102.4 \text{ kg}$$
$$= 197.6 \text{ kg}$$

The total mass allowed on the zipline trolley was 193.5 kg.

Therefore, amount their combined mass was over the limit = 197.6 – 193.5

$$= 4.1 \text{ kg}$$

Answer: 4.1 kg

33. The entrance fee to the amusement park was $48 for a teacher and half-price for a student. A group of 24 students and 5 teachers went to the amusement park. Calculate the TOTAL entrance fee for the group.   [3]

Solution

Full price = $48

Half price = ½ × 48

$$= \$24$$

Entrance fee for students = Number of students × Half-price fee

$$= 24 \times 24$$

$$= \$576$$

Entrance fee for teachers = Number of teachers × Full-price fee

$$= 5 \times 48$$

$$= \$240$$
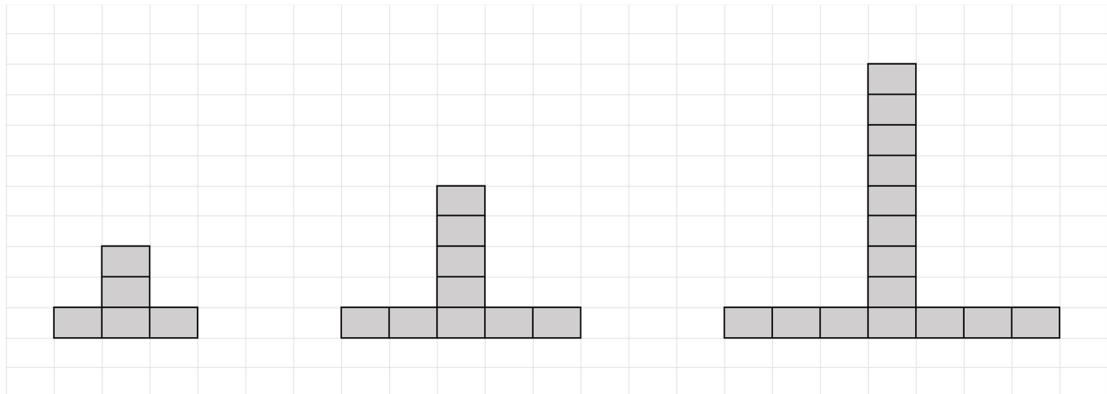
TOTAL entrance fee for the group = Entrance fee for students + Entrance fee for teachers

$$= \$576 + \$240$$

$$= \$816$$

Answer: $816

34. The block shapes shown on the grid below forms a pattern.

Describe the pattern rule. [2]

35. Complete the table below based on the different types of triangles.   [3]
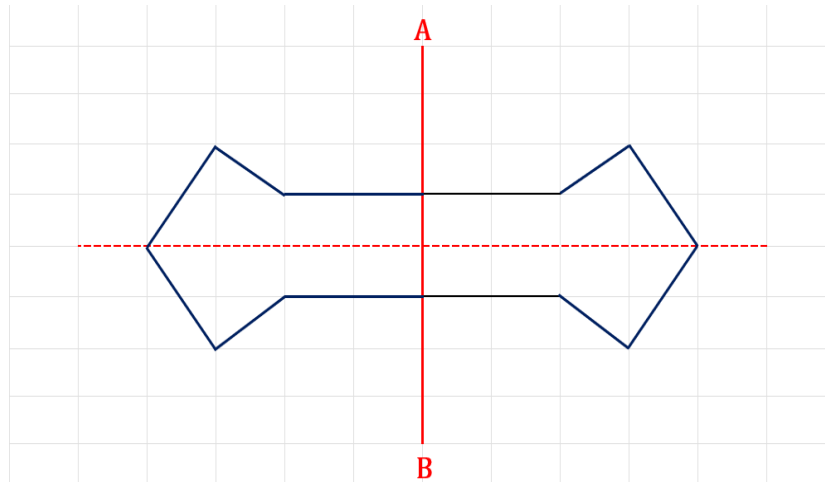
Type	Properties
Equilateral Triangle	All sides and angles are equal.
Isosceles Triangle	Two sides are equal. The two base angles are equal.
Scalene Triangle	No equal sides or angles.
Right Angled Triangle	One angle is 90°.

36. (a) Complete the shape shown below on the grid below using AB as the line of symmetry. [2]
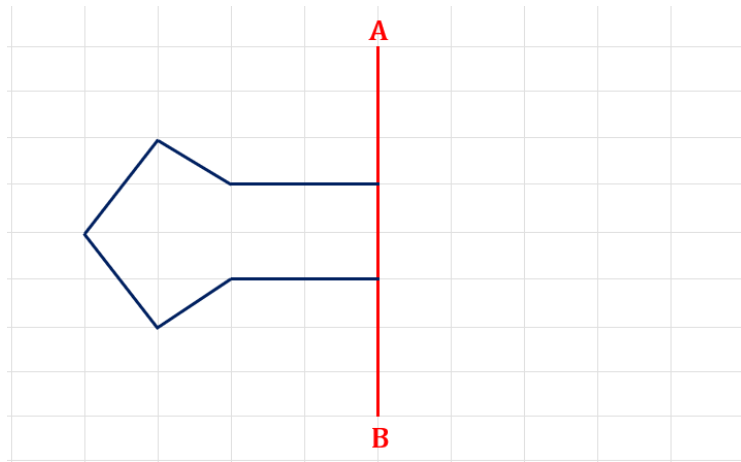
(b) How many lines of symmetry are there in the new shape? [1]

Answer: There are 2 lines of symmetry. (i) the horizontal line, AB and (ii) the vertical dotted line shown.

Section III

37. The mean of 8 numbers was 12. Another number was added and the new mean was 14. What number was added? [4]

Solution

Recall: Mean = $\dfrac{\text{Total sum of terms}}{\text{Number of terms}}$

The mean of 8 numbers was 12.
Hence, the total of these six numbers was 8×12
$$= 96$$

The new mean of the 9 numbers is 14.
Hence, the new total is 9×14
$$= 126$$

So, the number added was $126 - 96 = 30$

Answer: 30

38. The table below shows a basketball team's scores in 4 of the 5 games the team played.

Game	Score
1	10 less than Game 2
2	65
3	15 more than Game 1
4	70
5	

The mean score in the 5 games was 67.

What was the team's score in Game 5?   [4]

Solution

Score in Game 1 is 65 – 10 = 55

Score in Game 2   = 65   +

Score in Game 3 is 55 + 15 = 70

Score in Game 2   = 70
                              ———
                    Total = 260

Mean scores in the 5 games is 67.

Total score in 5 subjects = Mean score × Number of games

$$= 67 \times 5$$

$$= 335$$
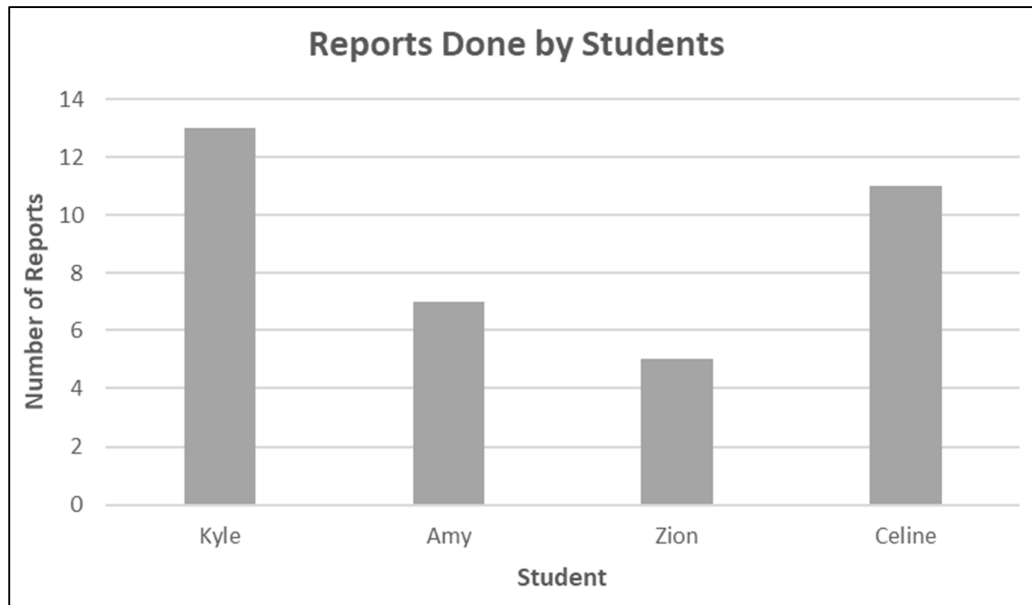

Score in Game 5 = 335 – 260

$$= 75$$

Answer: 75

39. The bar chart below shows the number of extra credit reports done by 4 students during a term.

Reports Done by Students

Calculate the difference between the modal number of reports done and the mean number of reports done. [4]

Solution

Modal means the one that occurs most often.

Based on the bar chart, the modal number of reports done was 13.

Total number of reports done $= 13 + 7 + 5 + 11$
$$= 36 \text{ reports}$$

Mean number of reports done $= \frac{36}{4}$
$$= 9$$

Difference between the modal number of reports done and the mean number of reports done:

$13 - 9 = 4$

Answer: 4

40. Identical counters are used to form patterns in a sequence. The first four patterns are shown below.
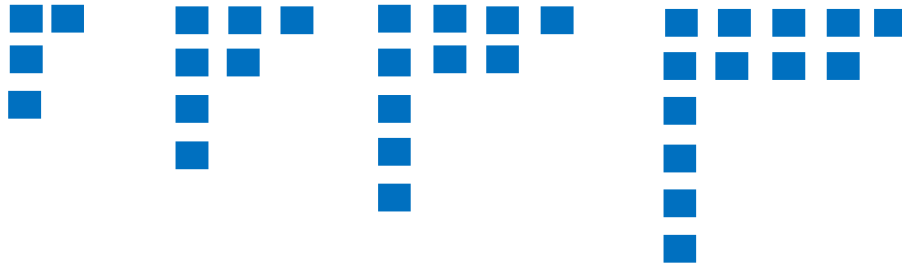
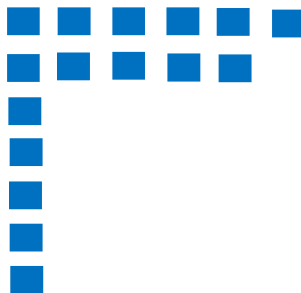a) Determine the number of counters that will form the **fifth** pattern in the sequence. [1]

b) Draw the **fifth** pattern in the sequence. [1]

c) Anna said that the number of counters in each pattern is prime. Explain why she is **incorrect**. [2]

Solution

Pattern number	1	2	3	4	5
Number of squares	4	7	10	13	16

The numbers of counters in the patterns are 4, 7, 10, 13 and 16.

A prime number is a number that has two factors: 1 and itself.

However, based on the number of counters in the pattern; 4, 10 and 16 have

factors besides 1 and itself and are therefore composite numbers.

Since the numbers are NOT all prime, Anna's answer is incorrect.