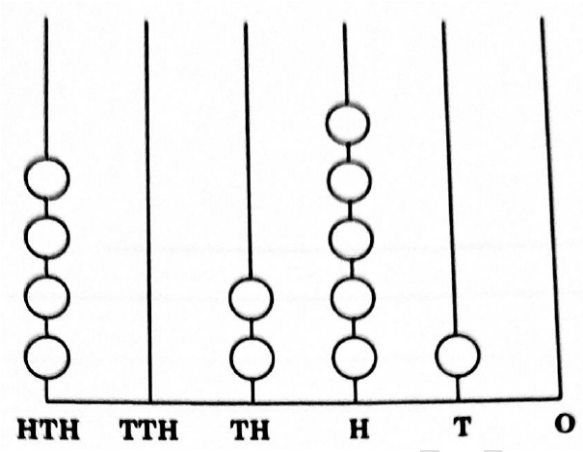
FAS-PASS
Maths

SEA YEAR 2021
Section 1

1. Write the numeral represented below.



Solution:

HTH	TTH	TH	H	T	O
100 000	10 000	1 000	100	10	1
4	0	2	5	1	0

Four hundred and two **thousand**, five hundred and ten.

Answer: 402 510

2. Write the missing number in the box below.

$$64 = \square^{2}$$

Solution:
64 is a square number because

$$64 = 8 \times 8$$
$$= 8^{2}$$

The number in the box should be 8.

Answer: $64 = \boxed{8}^{2}$

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3. Calculate 305×7.

Solution:

$305 \times 7 = (300 + 5) \times 7$

$= (300 \times 7) + (5 \times 7)$

$= 2100 + 35$

$= 2135$

Answer: 2135

4. Divide 288 by 9.

Solution:

	H	T	O	
		3	2	
9	2	8	8	
	2	7	0	30×9
		1	8	
		1	8	2×9
			0	

OR

$$9\overline{)288}$$

$$32$$

$$-27\downarrow$$

$$18$$

$$-18$$

$$0$$

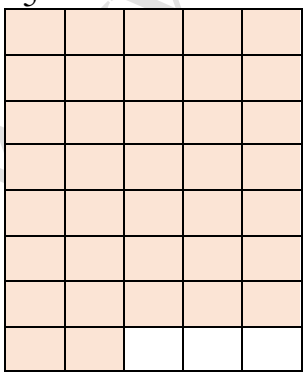
Answer: 32

5. Write $\frac{37}{5}$ as a mixed number.

1 whole has 5 fifths:

$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$

$\frac{37}{5}$ represents 37 fifths



1, 2, 3, 4, 5, 6, 7 } 7 wholes

2 fifths

OR

$$5\overline{)37}$$

$$7$$

$$-35$$

$$2 \text{ Rem}$$

$$\frac{37}{5} = 7 + \frac{2}{5} = 7\frac{2}{5}$$

Answer: $7\frac{2}{5}$

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6. $3\frac{5}{9}-\frac{1}{9}=$

Solution:

$$\frac{5}{9}-\frac{1}{9}=\frac{5-1}{9}$$

$$3+\frac{5}{9}-\frac{1}{9}=3+\frac{4}{9}$$

$$=3\frac{4}{9}$$

Answer: $3\frac{4}{9}$

7. Draw a circle around the 4 that has the value of 4 tenths.

4 4 . 4 4

Solution:

Tens	Ones	tenths	hundredths
10	1	$\frac{1}{10}$	$\frac{1}{100}$
4	4	4	4

Answer: 4 4 .(4)4

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

$>$ $=$ $<$

0.63 ☐ 0.36

Solution:

$>$ is greater than $=$ is equal to $<$ is less than

Ones	tenths	hundredths
1	$\frac{1}{10}$	$\frac{1}{100}$
0	6	3
0	3	6

0.63 has 6 tenths while 0.36 has 3 tenths. Since 6 is greater than 3,
then 0.63 $\underbrace{\text{is greater than}}_{>}$ 0.36

Answer: 0.63 [>] 0.36

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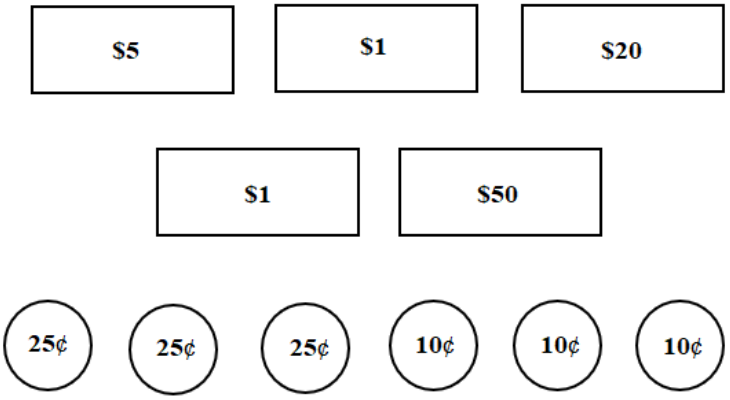
9. Calculate 40% of 500.
Solution:

$$40\% \text{ of } 500 = \frac{40}{100} \times 500$$
$$= 40 \times 5$$
$$= 200$$

Answer: 200

10. Daniel used the coins and bills below to buy a T-shirt. What was the cost of the T-shirt?



Solution:

Bills ($)	**Coins (¢)**
5	25
1	25
20 +	25
1	10 +
50	10
$77	10
	105¢

$$\text{Total} = \$77.00 + \$1.05 = \$78.05$$

Answer: $78.05

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11. What is the MOST appropriate standard unit for recording the height of a room?

Solution:

The height of a room is best measured in metres (m).

Answer: metres (m)

12. Complete the statements below.

17.42 kg = _____ g

Solution:

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

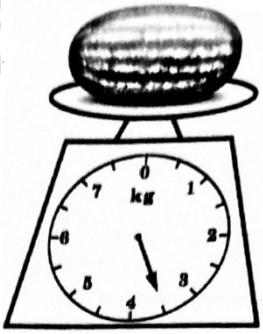
$17 \text{ kg} = 17 \times 1000 \text{ g} = 17\,000 \text{ g} +$

$0.42 \text{ kg} = 0.42 \times 1000 \text{ g} = \underline{\quad 420 \text{ g}}$

$= \underline{17\,420 \text{ g}}$

Answer: 17.42 kg = 17 420 g

13. A watermelon on a scale is shown below.



What is the mass of the watermelon?

Solution:

The pointer points to halfway between 3 and 4. We estimate the mass to be $3\frac{1}{2}$ kg or 3.5 kg.

Answer: $3\frac{1}{2}$ kg or 3.5 kg

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14. Kelly arrived 10 minutes after the start of a test. No additional time was given.

Start Time	8 : 45
End Time	9 : 40

How much time did Kelly have to complete the test?

Solution:

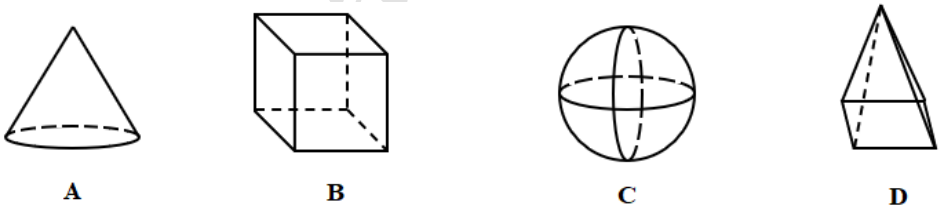
The number of minutes required to complete the test is 9:40 – 8:45 = 55 minutes

Kelly arrived 10 minutes late and had no extra time. So, she had 10 minutes less than the actual time required to complete the test.
Kelly therefore had $55-10=45$ minutes to complete the test.

Hours	Minutes
8	100
~~9~~	~~40~~
8	45
0	55

Answer: 45 minutes

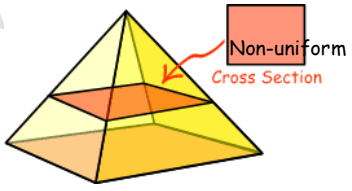
15. Which of the shapes shown below has a uniform cross-section?

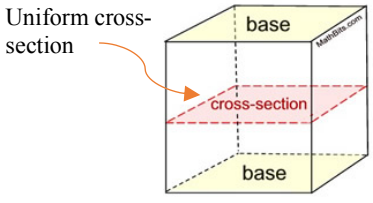


A **B** **C** **D**

Solution:

Shapes do not have uniform cross-section when parallel slices are not the same size as the base. Examples of uniform and non-uniform cross sections are shown below.





Shape B is the only one of the shapes with uniform cross-section.

Answer: Shape B

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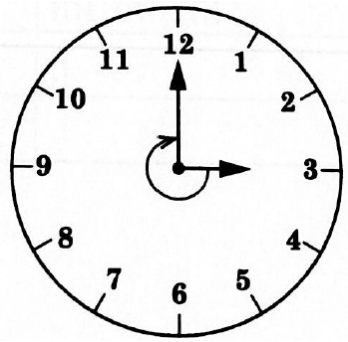
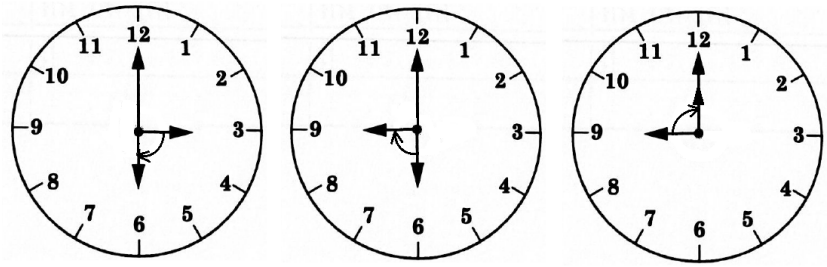
16. The hour hand of the clock shown below moved from 3 to 12.



How many quarter turns did it make?



Solution:

$\frac{1}{4}$ turn from 3 to 6

$\frac{1}{4}$ turn from 6 to 9

$\frac{1}{4}$ turn from 9 to 12

A total of 3 quarter turns from 3 to 12.

Answer: 3 quarter turns

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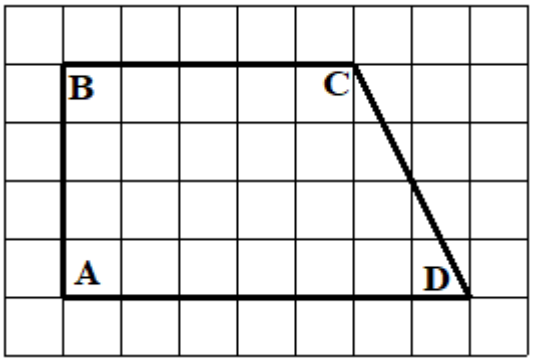
17. Which angle in the shape shown below is less than a right angle?



Solution:

A = right angle = 90°
B = right angle = 90°
C = obtuse angle > 90° and less than 180°
D = acute angle (less than 90°)

Angle D is less than a right angle.

Answer: D

18. The mean of 5 numbers is 86. What is the sum of the 5 numbers?

Solution:

Mean of 5 numbers is 86.

$$\frac{The\ sum\ of\ the\ 5\ numbers}{5} = 86$$

$$The\ sum\ of\ the\ 5\ numbers = 86 \times 5$$

H	T	O
	8	6
×		5
4	3	0

Hence, the sum of the 5 numbers is 430.

Answer: 430

By Fayad W. Ali and Shereen A. Khan.

19. Complete the tally chart below to show Jaheem's cricket score.

Students' Cricket Score		
Student	**Tally**	**Score**
Ryan	𝍸 𝍸 𝍸 𝍸 |	23
Aril	𝍸 𝍸 𝍸	15
Mark	||	2
Jaheem		17

The tally chart is completed.

Answer:

Students' Cricket Score		
Student	**Tally**	**Score**
Ryan	𝍸 𝍸 𝍸 𝍸 |	23
Aril	𝍸 𝍸 𝍸	15
Mark	||	2
Jaheem	𝍸 𝍸 𝍸 ||	17

20. The table below shows the places a group of students visited.

Places Students Visited	
Place	**Number of Students**
Zoo	6
Science Centre	9
Museum	12
Pitch Lake	6

Which place represents the mode?

Solution:

The mode is the category with the highest frequency. Twelve is the largest of all the numbers in the frequency column. So, the place that represents the mode is the museum.

Answer: Museum

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21. Complete the bill shown below.

APPLE RESTAURANT

Item	Unit Price	Total
2 Salads	$_____	$72.00
1 Cheeseburger	$24.00	$24.00
4 Cookies	$0.60	$2.40
Total		$_____

Solution:

2 salads cost $72.00.

$$\text{Cost of 1 salad} = \frac{\$72.00}{2}$$
$$= \$36.00 \text{ (unit price)}$$

$$\begin{array}{rr} \text{Total} = & \$72.00 \\ & \$24.00 + \\ & \$\ \ 2.40 \\ \hline & \$98.40 \end{array}$$

The completed bill is shown below.

Answer:

Item	Unit Price	Total
2 Salads	$36.00	$72.00
1 Cheeseburger	$24.00	$24.00
4 Cookies	$0.60	$2.40
Total		$98.40

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22. A banner is painted in three colours, $\frac{3}{5}$ blue, $\frac{1}{10}$ red and the remainder white. What fraction of the banner is painted white?

Solution:

Fraction painted blue $= \frac{3}{5}$

$\frac{3}{5} \overset{\times 2}{=} \frac{6}{10}$

Fraction painted red $= \frac{1}{10}$

The whole is $\frac{10}{10}$.

So, the fraction painted white

$= \frac{10}{10} - \left(\frac{6}{10} + \frac{1}{10}\right)$

$= \frac{10}{10} - \frac{7}{10}$

$= \frac{3}{10}$

Fraction painted white $= \frac{3}{10}$

Answer: $\frac{3}{10}$

By Fayad W. Ali and Shereen A. Khan.

23. Jerome has 17.5 m of rope to make swings. Each swing requires 2 m of rope. How many swings can he make from the rope?

Solution:

Length of rope $= 17.5\,\text{m}$

For each swing Jerome requires 2 m.

The number of swings that Jerome can make is $17.5 \div 2$

	T	O	t
		8 .	
2	1	7 .	5
	1	6 .	0
		1 .	5

8 swings will use $2m \times 8 = 16m$ and Jerome will have $1.5m$ left.
9 swings will require $2m \times 9 = 18m$. However, Jerome has only $17m$.

Hence, Jerome can make at most 8 swings because the remainder of 1.5 m would be insufficient to complete a 9th swing.

Answer: 8 swings

24. One third of a number is 18. What is $\frac{5}{6}$ of the same number?

Solution:
One third of the number is 18.

18

Three thirds of the number is $18 \times 3 = 54$

18	18	18

One whole = 3 thirds
The whole number is 54

To get $\frac{5}{6}$ of the number we can divide each third evenly to get six equal parts or sixths. Each part will now have 9.

9	9	9	9	9	9

$\frac{5}{6}$ of the whole is 5 parts $\times$ 9 =45

OR

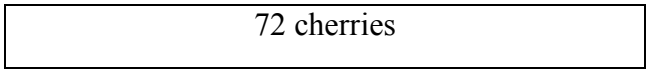
$\frac{5}{6}$ of the number is $\frac{5}{6} \times 54 = 5 \times 9 = 45$

Answer: 45

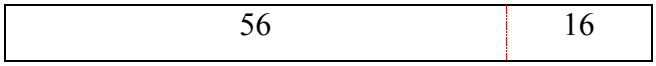
By Fayad W. Ali and Shereen A. Khan.

25. Jenny and Cindy picked 72 cherries altogether. Jenny picked 16 cherries **more than** Cindy.
How many cherries did **each** girl pick?

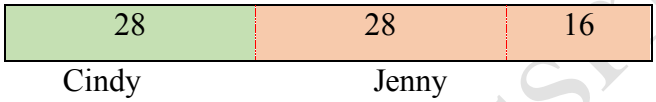
Solution:
We can represent the total number of cherries as one whole:



Jenny picked 16 cherries **more than** Cindy. We now separate the 16 cherries Jenny picked so that the whole is represented as comprising two parts, 16 and 56 ($because\ 72 - 16 = 56$).



The remaining 56 cherries will have to be shared equally between the two girls, $58 \div 2 = 28$.



Cindy picked 28 cherries.
Jenny picked $28 + 16 = 44$ cherries.

Answer: Cindy picked 28 cherries.
Jenny picked 44 cherries.

26. Maria and Sam bought the items shown below.

Maria's Bill	**Sam's Bill**
1 iPad 3 Smartwatches 4 Cellphones Total \$3 028	3 iPads 5 Smartwatches 6 Cellphones Total \$5 032

Calculate the TOTAL cost of one iPad, one smartwatch and one cellphone.

Solution:

We present the information in a table to compare the quantities bought.

	iPads	Smartwatches	Cellphones	Total Cost
Sam	3	5	6	\$5 032
Maria	1	3	4	\$3 028

We notice that the difference in quantities of both sets of items bought is equal to 2.

	iPads	Smartwatches	Cellphones	Total Cost
Sam	3	5	6	\$5 032
Maria	1	3	4	\$3 028
Difference	2	2	2	\$2 004

This means that: 2 iPads + 2 Smartwatches + 2 Cellphones cost \$2004
Hence, the cost of : 1 iPad + 1 Smartwatch + 1 Cellphone is one-half of \$2004

	iPads	Smartwatches	Cellphones	Total Cost
Sam	3	5	6	\$5 032
Maria	1	3	4	\$3 028
Difference	2	2	2	\$2 004
Unit Cost	1	1	1	\$1 002

Answer: \$1 002

27. Jessie has some marbles. The number of marbles he has is more than 50 but less than 100. When the marbles are placed in groups of 10, there is a remainder of 3 and when they are placed in groups of 6, there is a remainder of 1.

How many marbles does Jessie have?

Solution:

Condition 1: Number of marbles that Jessie has is between 50 and 100. The numbers which satisfies **Condition** 1 will be from 51 to 99, that is {51, 52, 53, …99}

Condition 2: The number of marbles divided by 10 will give remainder of 3. These numbers will end in 3. For example, $\frac{63}{10} = 6$ rem 3, and $\frac{73}{10} = 7$ rem 3, and so on.
Therefore, the numbers that satisfy both **Conditions 1 and 2** are:
{53, 63, 73, 83, 93}

Condition 3: The number of marbles divided by 6 will leave a remainder of 1. So, we now check each number that satisfies **Conditions 1 and 2** to determine which one will leave a remainder of 1 when divided by 6.

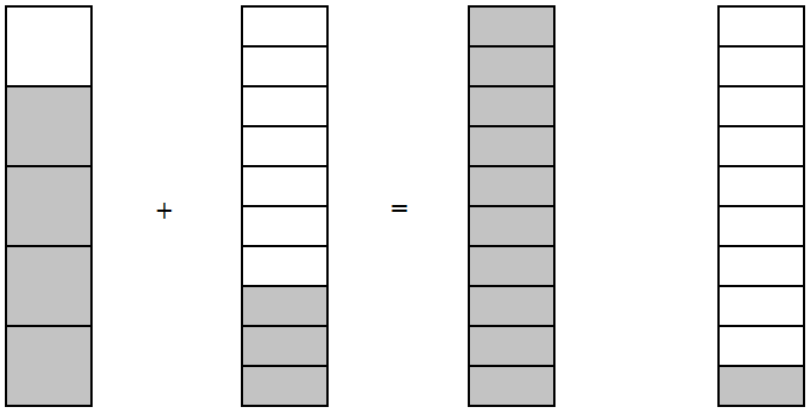
$$53 \div 6 = 8\ R5$$
$$63 \div 6 = 10\ R3$$
$$73 \div 6 = 12\ R1$$
$$83 \div 6 = 13\ R5$$
$$93 \div 6 = 15\ R3$$

73 is the only number in the set that satisfies conditions 1, 2 and 3.
Hence, the number of marbles is 73.

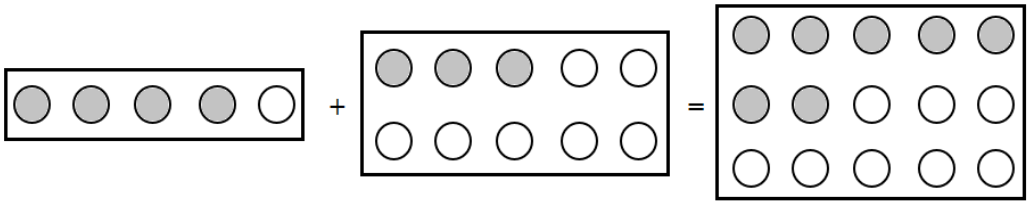
Answer: 73 marbles

28. Two students were asked to use manipulatives to add $\frac{4}{5}$ and $\frac{3}{10}$. Fraction pieces and counters were used as shown below.

Priya's fraction pieces



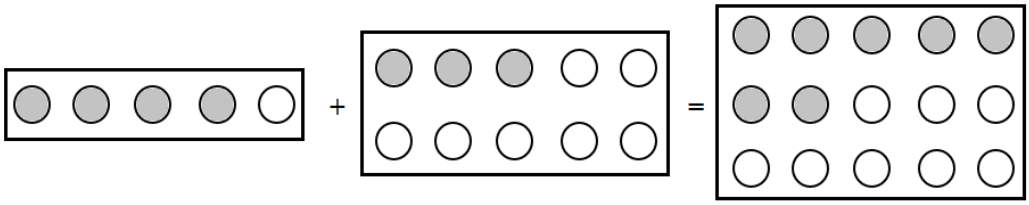
Sharda's counters



State which student's manipulatives represent the correct solution, and explain why.

Solution:

Sharda's counters show



$\frac{4}{5}$ $\frac{3}{10}$ $\frac{7}{15}$

Sharda represented both fractions correctly but incorrectly added fifths to tenths without converting them to a common denominator. She added numerators and the denominators, but the denominators were NOT the same and so she had an incorrect result.

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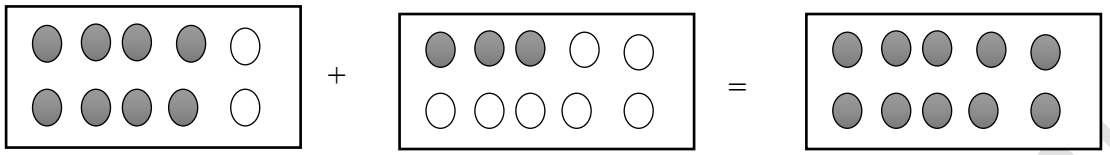
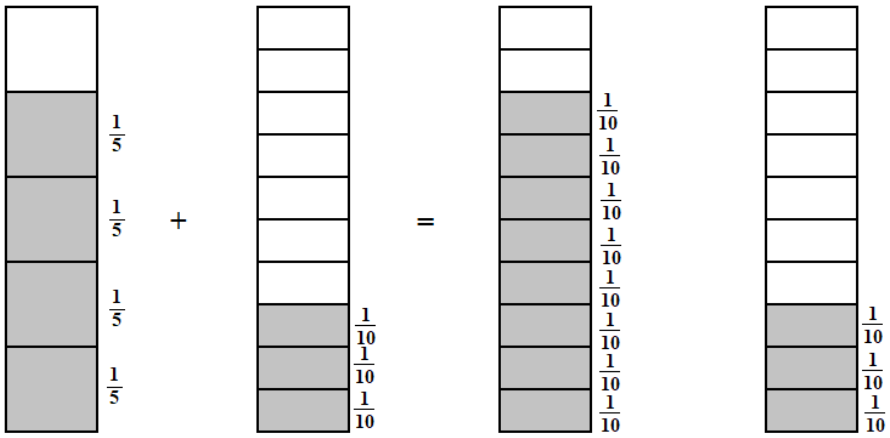
If, instead, Sharda had used her counters to express $\frac{4}{5}$ as tenths, she would have arrived at the correct answer.



$\frac{4}{5} = \frac{8}{10}$ $\frac{3}{10}$ $1\frac{1}{10}$

Priya's manipulatives show that

$\frac{4}{5}$ + $\frac{3}{10}$ = $\frac{8}{10}$ + $\frac{3}{10}$ = $\frac{11}{10}$



$= \frac{11}{10}$ or $1\frac{1}{10}$

Priya's solution is correct, her manipulative shows $\frac{4}{5}$ expressed as $\frac{8}{10}$. This would result in $\frac{11}{10} = 1\frac{1}{10}$, and which is the correct answer.

Answer: Priya's manipulatives represent the correct solution.

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29. Amanda left school at 3:20 p.m. and arrived home $\frac{3}{4}$ of an hour later. What time did Amanda arrive home?

Solution:

Amanda's will arrive home 45 minutes after 3:20. $\frac{3}{4}\text{ hour} = \frac{3}{4}\times 60$

$= 45\text{ minutes}$

40 minutes after 3:20 p.m. will be 4:00 o'clock or 4:00 p.m.

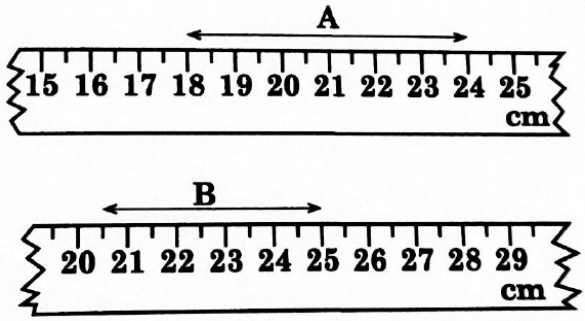
45 minutes after 3:20 p.m. will be 5 minutes past 4 o'clock or 4:05 p.m.

OR

	1	
Departure time	3 : 2 0	
Time taken to reach home	: 4 5	65 minutes = 1 hour and 5 minutes
	4 : 0 5	

Answer: 4:05 p.m.

30. Two lengths, A and B are shown below.



What is the sum of the lengths of A and B?

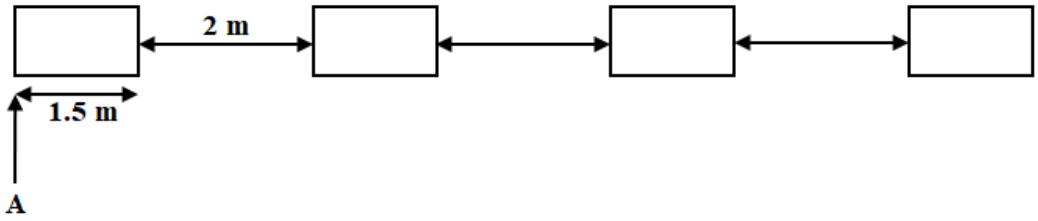
Solution:

Length of A = 24 cm – 18 cm = 6 cm Length of B = 25 cm – 20.5 cm = 4.5 cm

Sum of the lengths of A and B = 6 cm + 4.5 cm = 10.5 cm

Answer: 10.5 cm

31. Roadworks Company paints 20 white lines on the highway. The lines are 1.5 m in length and 2 m apart as shown below. Roadworks begins painting from Point A.



What is the distance from point A to the end of the 20th line painted?

Solution:

The number of spaces between the 1st line and the 20th line is 19.

The total length of these 19 spaces = $19\ m \times 2$
$= 38\,\text{m}$

Each white line is 1.5 m long.

The total length of the 20 white lines = $1.5\ m\ \times 20$
$= 30\,\text{m}$

Hence, the distance from Point A to the end of the 20th white line = (30+38) m
$= 68\,\text{m}$

Answer: 68 metres

32. The incomplete table below shows the time taken by 5 cyclists to complete a race.

Race Times of Cyclists

Cyclist	Jiselle	Cleo	Mison	Nazra	Sue-Ann
Time in minutes	34.60	30.45	34.95		30.50

Nazra won the race and was 1.35 minutes faster than the cyclist who placed second.

What was Nazra's time, in minutes?

Solution:

The cyclist who placed second is Cleo in 30.45 minutes since this is the least time among the four given times.

Nazra took 1.35 minutes less than Cleo.

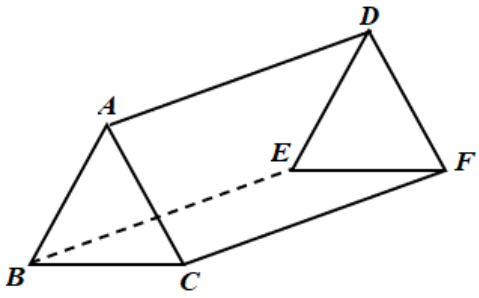
$$\therefore \text{Nazra's time} = \begin{array}{r} 30.45 \\ 1.35 \; - \\ \hline 29.10 \end{array}$$

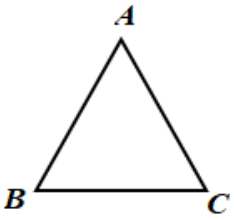
Answer: 29.10 minutes

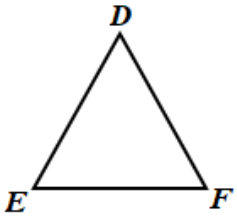
33. Draw all the faces of a triangular prism.

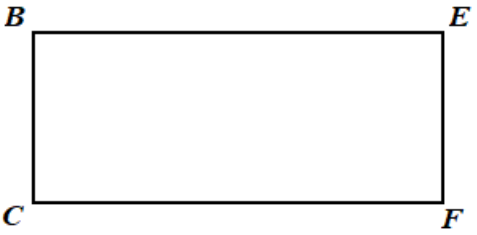
Solution:

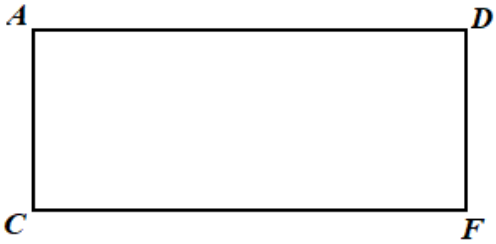
A triangular prism has two parallel triangular faces and three rectangular faces.

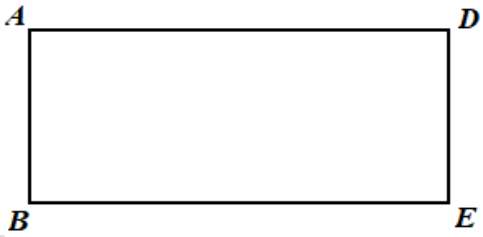








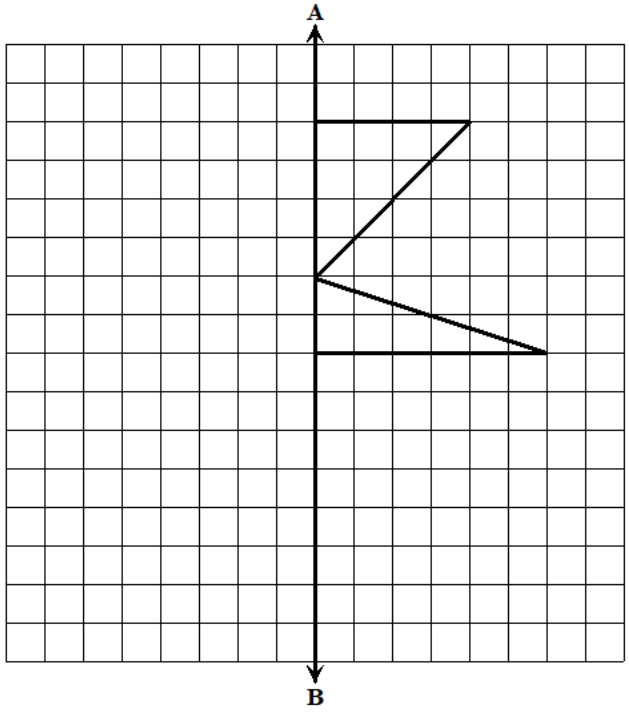




There are two identical triangular faces and three rectangular faces, as shown.

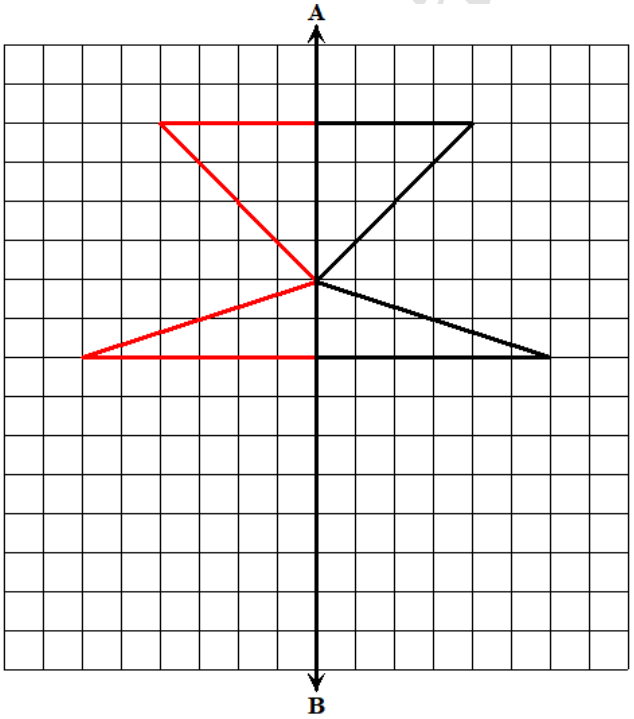
By Fayad W. Ali and Shereen A. Khan.

34. Complete the shape using AB as the line of symmetry.



Solution:

The figure below shows the completed shape with AB as the line of symmetry (also called the line of reflection or the mirror line or the axis of reflection).



35. The tally chart below shows the food chosen by a class of 27 students.

Food Chosen by Students

Food	Tally
Pizza	𝍸
Fried Chicken	𝍸 ||||
Roti	𝍸 |||
Gyros	𝍸

What **percentage** of the class chose the mode?

Solution:

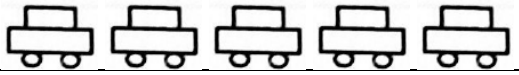
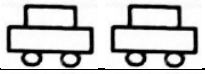
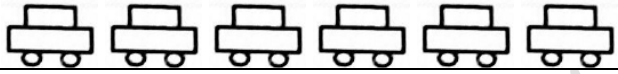
Total number of students in the class $= 5 + 9 + 8 + 5$
$= 27$

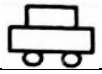
The modal food is fried chicken and was chosen by 9 students.

Percentage choosing fried chicken $= \frac{9}{27} \times 100$
$= 33\frac{1}{3}\%$

Answer: $33\frac{1}{3}\%$

36. The incomplete pictograph below represents a total of 105 toy cars owned by 4 boys.

Toys Cars Owned by Boys	
Danny	
Lex	
Amrit	
Tom	

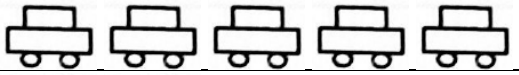
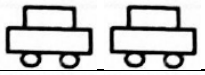
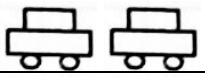
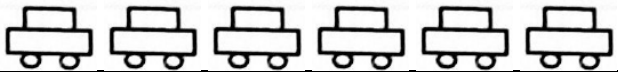
Key	 = 7 toy cars

Complete the pictograph to show the number of toy cars owned by Lex.

Solution:

Number of toys owned by
Danny $= 5 \times 7 = 35$
Amrit $= 2 \times 7 = 14$ +
Tom $= 6 \times 7 = \underline{42}$
$\underline{91}$
Total number of cars owned by the four boys = 105
The number of toy cars owned by Lex = 105 – 91 = 14
1 picture represents 7 toy cars
The number of pictures required to represent Lex's toy cars = $14 \div 7 = 2$
The completed pictograph is shown below.

Answer:

Toys Cars Owned by Boys	
Danny	
Lex	
Amrit	
Tom	

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37. Macy shared plastic bottles and straws between Group A and Group B. The number of bottles given to Group B was $\frac{2}{3}$ the number given to Group A. For every 4 bottles Macy gave to a group, she gave 5 straws.

Group	Plastic Bottles	Straws
A	24	_____
B	_____	_____
Total	_____	50

Complete the table to show the number of plastic bottles and straws each group received.

Solution:

For every 4 bottles Macy gave to a group, she gave 5 straws.

Group A got 24 bottles. Number of sets of 4 bottles in 24 bottles $= 24 \div 4 = 6$

Hence, the number of straws given to Group A $= 6 \times 5 = 30$

Number of bottles given to Group B $= \frac{2}{3} \times 24 = 16$

Number of sets of 4 bottles in 16 bottles $= 16 \div 4 = 4$

Hence, the number of straws given to Group B $= 4 \times 5 = 20$

The completed table is shown below.

Answer:

Group	Plastic Bottles	Straws
A	24	30
B	16	20
Total	40	50

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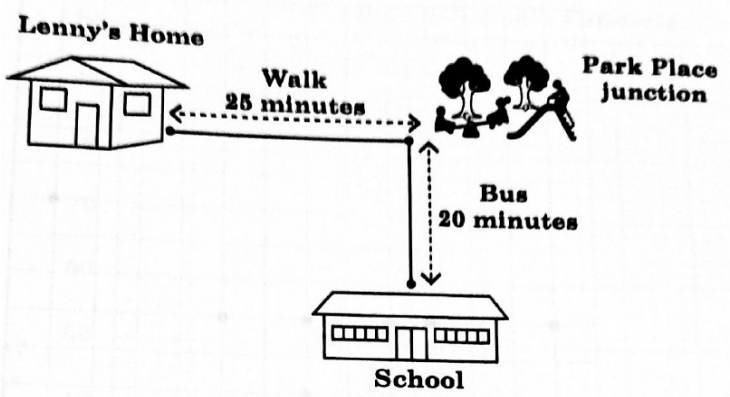
38. The diagram below shows the time taken by Lenny to travel from home to school. School starts at 8:30 a.m. Lenny arrived at school 10 minutes early. Ravi took 12 minutes **less than** Lenny to walk from his home to Park Place junction.



What time did Ravi leave home to arrive at Park Place junction at the same time as Lenny?

Solution:

Time that Lenny arrived at school is $8:30$

$$\underline{:10\ -}$$

$$8:20 \text{ a.m.}$$

Time Lenny was at Park Place junction $8:20$

$$\underline{:20\ -}$$

$$8:00 \text{ a.m.}$$

Ravi and Lenny arrived at Park Place together at 8:00 a.m. Lenny took 25 minutes to journey from home to Park Place Junction.
The time Ravi took from his home to Park Place junction was 12 minutes less than Lenny. [Assume that the time Ravi took from his home to Park Place Junction is 12 minutes less than the time Lenny took from his home to Park Place Junction. The map did not show Ravi's home and the two would have had different starting points.]

Therefore Ravi took $25-12=13$ minutes from his home to park place Junction.
Ravi left home at $8:00$

$$\underline{:13\ -}$$ OR 13 minutes before 8 o'clock

$$7:47 \text{ a.m.}$$

Answer: 7:47 a.m.

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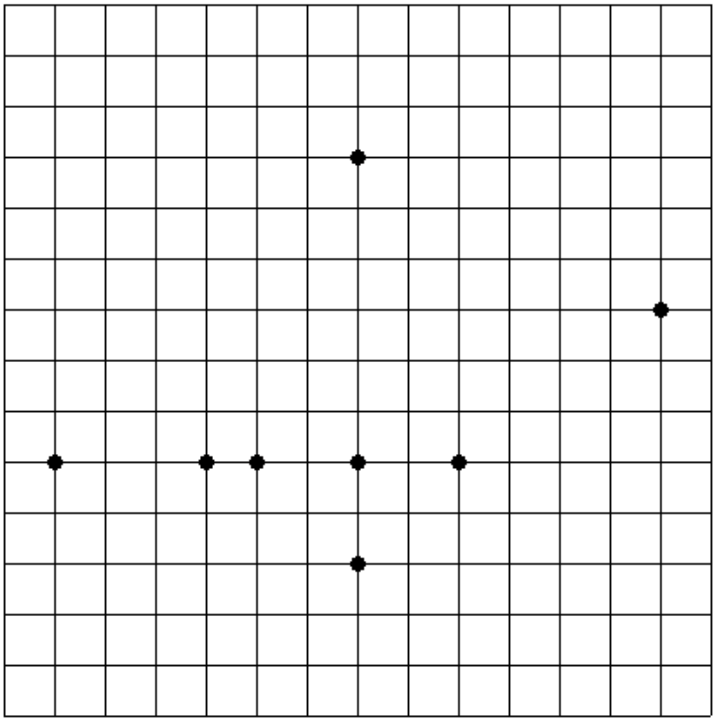
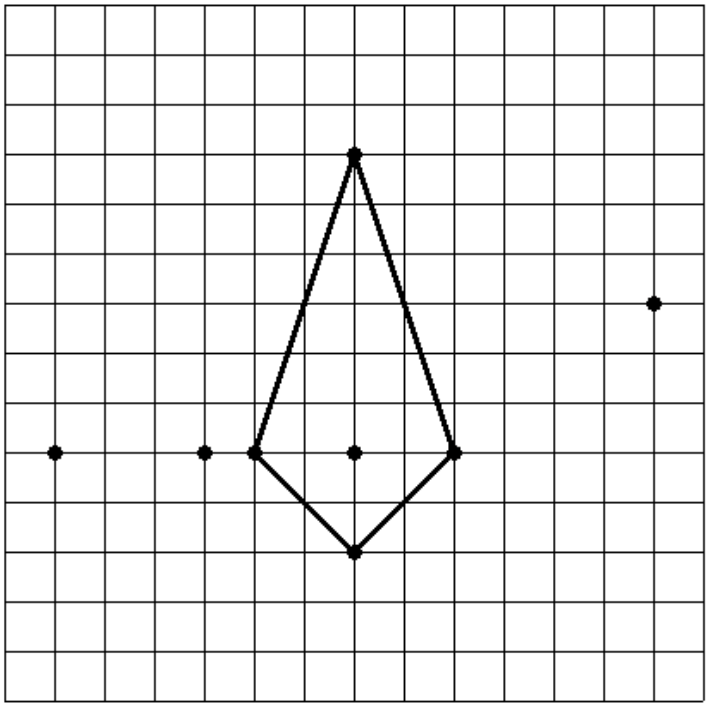
39. (a) On the grid below, connect dots to form a quadrilateral with one line of symmetry and no parallel sides.

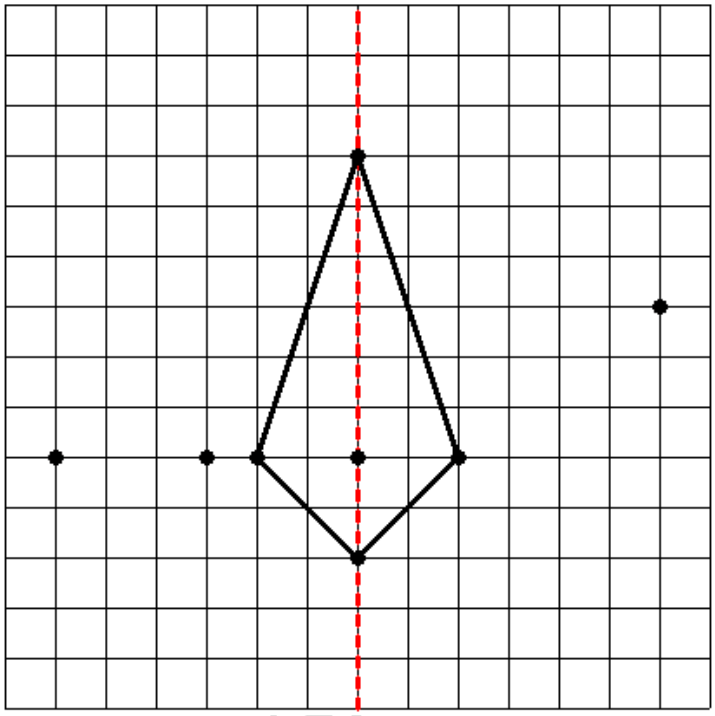


Answer:

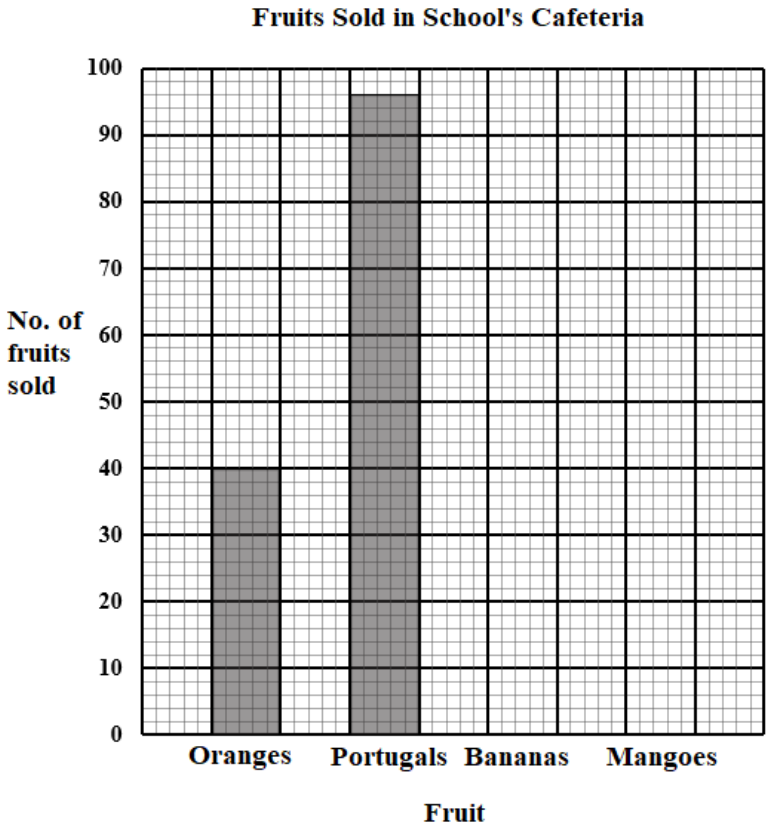


(b) Draw the line of symmetry on the quadrilateral in part (a).

Answer:



40. The incomplete bar graph below shows the number of fruits sold in a school's cafeteria.



The number of portugals sold was 96. The number of mangoes sold was equal to $\frac{1}{3}$ the number of portugals. The mean number of fruits sold was 60. Draw the bar to show the number of bananas sold.

Solution:

Number of portugals sold = 96

Number of mangoes sold $= \frac{1}{3} \times 96 = 32$

Number of oranges sold $= 40$

Number of portugals, mangoes and oranges sold $= 96 + 32 + 40 = 168$

Mean number of fruits sold $= 60$

Number of fruits sold $= 60 \times 4 = 240$

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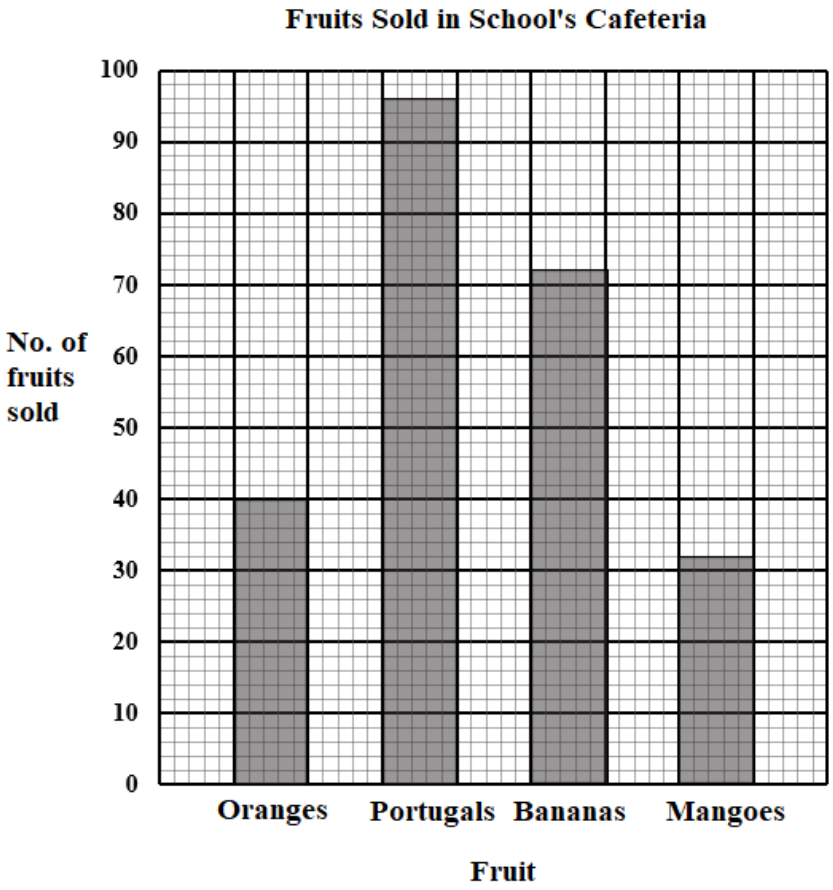
Number of bananas sold $= 240 - 168 - 72$

The completed bar graph is show below.

Answer:



END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK BEFORE HANDING IN YOUR PAPER.

By Fayad W. Ali and Shereen A. Khan.