

Sample Exam 10 - Solutions

Session 10

Total: 75 marks

SECTION I

1) Write in figures:

Seven hundred and two thousand and eight.

[1]

Hundreds of Thousands	Tens of Thousands	Thousands	Hundreds	Tens	Ones
7	0	2	0	0	8

Answer: 702 008

2) Subtract

[1]

$$\begin{array}{r}
 6 \\
 7 14 9 2 \\
 - 5 4 1 \\
 \hline
 6 9 5 1 \\
 \hline
 \end{array}$$

3) Express 60% as a fraction in its LOWEST terms.

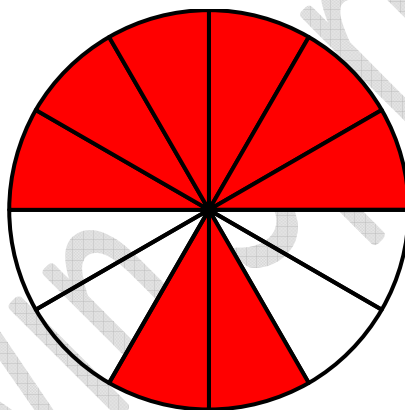
[1]

$$\begin{aligned} 60\% &= \frac{60}{100} \\ &= \frac{6}{10} \\ &= \frac{3}{5} \end{aligned}$$

Answer: $\frac{3}{5}$

4) Shade $\frac{2}{3}$ of the shape below.

[1]



There are 12 sections in all.

$$\frac{2}{3} \text{ of the shape} = \frac{2}{3} \times 12$$

$$= \frac{24}{3}$$

$$= 8 \text{ sections}$$

5) **MULTIPLY:**

[1]

$$2.04 \times 0.06$$

There are 4 total decimal places in both numbers.

Ignore the decimal places and complete the multiplication as if operating on two integers.

	H	T	O
	2	0	4
*			6
1	2	2	4

Rewrite the product with 4 total decimal places.

Answer: 0.1224

6) Write the number 476 to the NEAREST hundred.

[1]

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

H	T	O
4	7	6

For the question, the tens figure in 476 is 7, which is more than 5. Therefore, we round it up to the next hundred.

Answer: 500

7) Complete the sequence below by filling in the missing fraction in the box. [1]

$$\frac{1}{2}, \frac{3}{5}, \frac{5}{8}, \frac{\boxed{7}}{\boxed{11}}$$

$$\begin{array}{ccccccc} \text{Numerator:} & 1 & \rightarrow & 3 & \rightarrow & 5 & \rightarrow & 7 \\ & & & +2 & & +2 & & +2 \end{array}$$

$$\begin{array}{ccccccc} \text{Denominator:} & 2 & \rightarrow & 5 & \rightarrow & 8 & \rightarrow & 11 \\ & & & +3 & & +3 & & +3 \end{array}$$

8) Azzarah bought 20 fruits from the market vendor on Saturday. She bought 2 paw paws, 5 bananas and the remaining fruits were apples. What percentage of the fruits were apples? [1]

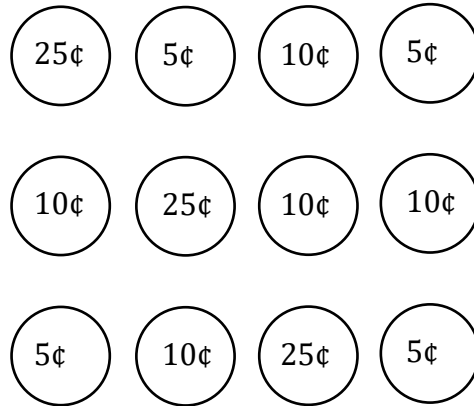
$$\begin{aligned} \text{Number of apples} &= \text{Total fruits} - (\text{Number of paw paws} + \text{Number of bananas}) \\ &= 20 - (2 + 5) \\ &= 20 - 7 \\ &= 13 \text{ apples} \end{aligned}$$

$$\begin{aligned} \text{Percentage of the fruits that were apples} &= \frac{\text{Number of apples}}{\text{Total number of fruits}} \times 100 \\ &= \frac{13}{20} \times 100 \\ &= 65\% \end{aligned}$$

Answer: 65%

9) Calculate the total value of coins shown below.

[1]



Coins (¢)

25
5
10
5
10
25
10
10
5
10
25
5

~~37~~

145 ¢

Answer \$1.45

10) 2.014 kilometres = 2014 metres

[1]

Using the conversion:

$$1000 \text{ m} = 1 \text{ km}$$

Converting km to m we multiply by 1000:

$$2.014 \times 1000 = 2\ 014 \text{ m}$$

Multiplying by 1000 so we move the decimal point 3 spaces to the right

$$2.014.$$

Answer: 2 014 m

11) Kyle spent $\frac{5}{8}$ of his monthly allowance and was left with \$105.

What is Kyle's monthly allowance?

[1]

$$\begin{aligned} \text{Remaining fraction} &= 1 - \frac{5}{8} \\ &= \frac{3}{8} \end{aligned}$$

$$\frac{3}{8} \text{ of monthly allowance} = \$105$$

$$\begin{aligned} \text{Total monthly allowance} &= \frac{8}{3} \times 105 \\ &= \$280 \end{aligned}$$

Answer: \$280

12) Express 2.6 hours in minutes.

[1]

Separating the whole number and the decimal gives:

$$\begin{aligned} 1 \text{ hour} &= 60 \text{ mins} \\ 2 \text{ hours} &= 2 \times 60 \\ &= 120 \text{ mins} \end{aligned}$$

We need to convert the decimal to a fraction
Tenths Column

$$0.6 = \frac{6}{10} = \frac{3}{5}$$

$$1 \text{ hour} = 60 \text{ mins}$$

$$\frac{3}{5} \text{ hour} = \frac{3}{5} \times 60$$

$$= 36 \text{ mins}$$

$$\begin{aligned} \text{Therefore } 2.6 \text{ hours} &= 120 \text{ mins} + 36 \text{ mins} \\ &= 156 \text{ mins} \end{aligned}$$

13) A box of cupcakes weighs 2.8 kg and a box of cookies weighs 1895 g. By how much is one box heavier than the other? [1]

Using the conversion:

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

Converting kg to g we multiply by 1000:

$$2.8 \times 1000 = 2800 \text{ g}$$

Multiplying by 1000 so we move the decimal point 3 spaces to the right

$$2.800.$$

$$\begin{aligned} \text{Amount one box is heavier than the other} &= 2800 - 1895 \\ &= 905 \text{ g} \end{aligned}$$

Answer: 905 g

- 14) How many pieces of ribbon 15 cm long can be cut from a roll of ribbon measuring 1.8 m long? [1]

Using the conversion:

$$100 \text{ cm} = 1 \text{ m}$$

Converting m to cm we multiply by 100:

$$1.8 \times 100 = 180 \text{ cm}$$

Multiplying by 100 so we move the decimal point 2 spaces to the right

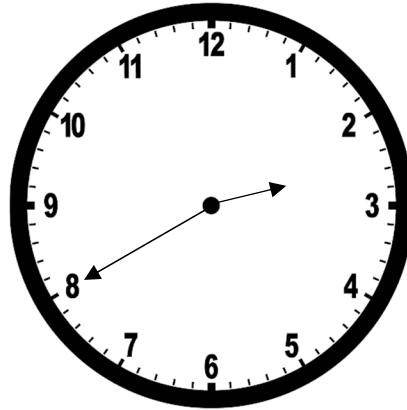
$$1.80.$$

$$\begin{aligned} \text{Number of pieces of ribbon} &= \frac{\text{Length of roll of ribbon}}{\text{Length of each piece of ribbon}} \\ &= \frac{180}{15} \\ &= 12 \text{ pieces of ribbon} \end{aligned}$$

Answer: 12

15) The clock shown below is 15 minutes fast.

[1]



To which number should the longer hand point to show the correct time?

The longer hand is pointing to the number 8 and since every number interval represents 5 minutes, it is indicating 40 minutes past the hour of 2.

Since the clock is 15 minutes fast:

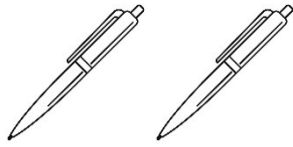
$$\begin{aligned} \text{Amount of minutes past the hour of 2} &= 40 - 15 \\ &= 25 \text{ mins} \end{aligned}$$

$$\begin{aligned} \text{Number the longer hand should be pointing to} &= \frac{25}{5} \\ &= 5 \end{aligned}$$

Answer: 5

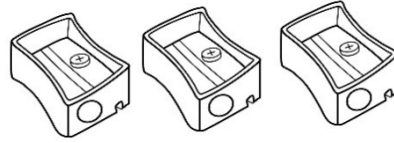
16) Raynelle buys some of the stationery as advertised below.

[1]



Pens

2 for \$5



Erasers

3 for \$5

She buys 6 erasers and pays with a \$20.00 bill. How many pens can she buy with the remainder of the money?

$$\text{Cost of 3 erasers} = \$5$$

$$\begin{aligned} \text{Cost of 6 erasers} &= 2 \times \$5 \\ &= \$10 \end{aligned}$$

$$\begin{aligned} \text{Remainder of the money} &= \$20 - \$10 \\ &= \$10 \end{aligned}$$

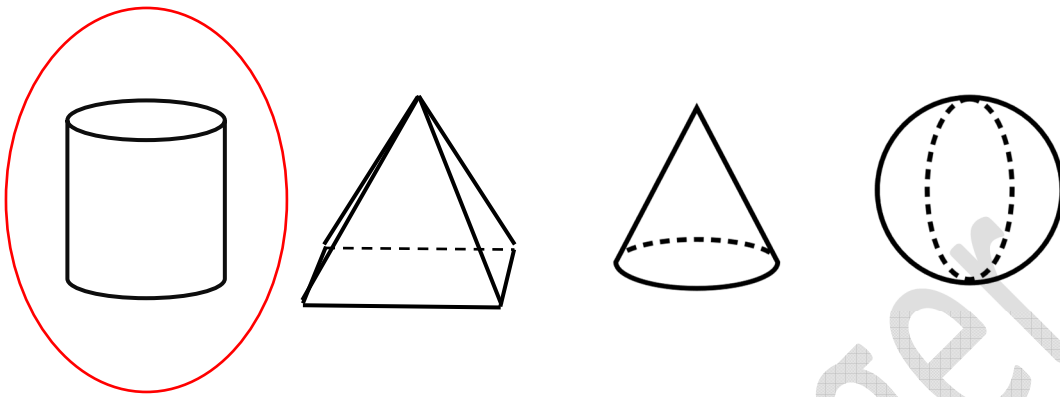
$$\text{Since cost of 2 pens} = \$5$$

$$\begin{aligned} \text{Number of pens she can buy} &= 2 \times 2 \\ &= 4 \text{ pens} \end{aligned}$$

Answer: 4 pens

17) Circle the shape below which has a uniform cross-section.

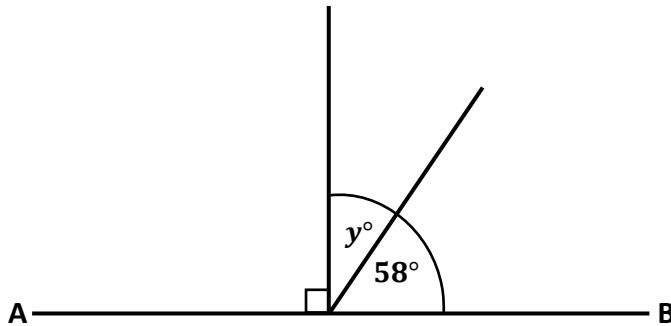
[1]



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18) The diagram below shows three angles. AB is a straight line.

[1]



Calculate the value of y .

A straight line has 180° .

Straight line AB = $90^\circ + y^\circ + 58^\circ$

$$180^\circ = 90^\circ + y^\circ + 58^\circ$$

$$180^\circ = 148^\circ + y^\circ$$

$$y^\circ = 180^\circ - 148^\circ$$

$$y^\circ = 32^\circ$$

Answer: 32°

- 19) The mean of 24 and 18 is the same as the mean of 27 and **a**.
What number does **a** represent?

[1]

Since the mean is the same then the total sum must also be the same.

$$24 + 18 = 27 + a$$

$$42 = 27 + a$$





$$a = 42 - 27$$


$$= 15$$

Answer: 15

Kerwin Springer

20) The table below shows the number of runs scored by Ozil in four cricket matches.

Match	Runs Scored
1	
2	
3	
4	


 = 8 runs

Ozil scored a total of 100 runs. Complete the table to show the number of runs he scored in Match 3. [1]

Total number of runs = 100

Number of runs accounted for in pictograph = $16 + 28 + 40$
= 84 runs

Number of runs Ozil scored in Match 3 = $100 - 84$
= 16 runs

Number of  needed = $\frac{16}{8}$
= 2

SECTION II

21) Zaim triples a certain number and then adds 9. The result is 45.

What is the number?

[2]

The result is 45 after the number is tripled and 9 added. We find the number we must work backwards, starting with the answer and reversing the operations.

First, we subtract 9 from 45: $45 - 9 = 36$

Next, we divide 36 by 3 to get the original number: $\frac{36}{3} = 12$

Answer: 12

22) Safa gained 30 points for being punctual. However, yesterday she was 10 minutes late to school and she lost 40% of her points.

How many points does she have left?

[2]

Number of points gained = 30 points

Percentage of points lost = 40%

$$\begin{aligned} \text{Number of points lost} &= \frac{40}{100} \times 30 \\ &= 12 \text{ points} \end{aligned}$$

Number of points Safa has remaining = $30 - 12$

$$= 18 \text{ points}$$

Answer: 18 points

23) Cadel started his mathematics assignment which contained 40 questions. For every 8 questions he completed he took a 5-minute break. What was the total amount of time being spent on breaks during the period he started and completed the assignment? [2]

Questions 1-8 = 1 break

Questions 9-16 = 1 break

Questions 17- 24= 1 break

Questions 25-32 = 1 break

Questions 33-40 = 1 break

Total number of breaks Cadel took = 5 breaks

Duration of 1 break = 5 mins

Total amount of time spent on breaks = 5×5
= 25 mins

Answer: 25 minutes

24) Mr. Jones purchased a piece of wire measuring $5\frac{1}{4}$ m long. He cut $2\frac{3}{5}$ m of it to use as fencing for his vegetable patch.

What is the length of the remaining piece of wire?

[2]

$$\text{Length of remaining piece of wire} = 5\frac{1}{4} \text{ m} - 2\frac{3}{5} \text{ m}$$

Whole Numbers

$$= 5 - 2$$

$$= 3$$

$$= 2$$

Fractions

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

$$= \frac{5 - 12}{20}$$

$$= \frac{5}{20} - \frac{12}{20}$$

$$= \frac{20+5}{20} - \frac{12}{20}$$

$$= \frac{25}{20} - \frac{12}{20}$$

$$= \frac{13}{20}$$

$$\text{Final Answer: } 2\frac{13}{20}$$

$$\text{Answer: } 2\frac{13}{20} \text{ m}$$

- 25) Soraya bought a palm tree measuring 0.75 m in height. She planted it in her backyard and the tree grew 0.25 m per week. How many weeks did it take for the palm tree to reach a height of 5 m? [2]

$$\begin{aligned}\text{Height the palm tree grew} &= 5 - 0.75 \\ &= 4.25 \text{ m}\end{aligned}$$

$$\text{Rate of growth} = 0.25 \text{ m per week}$$

$$\begin{aligned}\text{Number of weeks taken to reach 5 m} &= \frac{4.25}{0.25} \\ &= 17 \text{ weeks}\end{aligned}$$

Answer: 17 weeks

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26) Victoria went to the bakery and purchased 30 pastries consisting of 6 cheese puffs, some croissants and some beef pies. She purchased twice as many beef pies as croissants.

She recorded her purchase as shown in the table below.

a) Complete the table.

[2]

Pastry	Number Purchased
Cheese Puffs	6
Croissants	8
Beef Pies	16
TOTAL	30

$$\begin{aligned}
 \text{Number of croissants and beef pies} &= \text{Total pastries} - \text{Number of cheese puffs} \\
 &= 30 - 6 \\
 &= 24
 \end{aligned}$$

$$\text{Number of beef pies} = 2 \times \text{Number of croissants}$$

$$\begin{aligned}
 \text{Total parts} &= 1 + 2 \\
 &= 3
 \end{aligned}$$

$$3 \text{ parts} = 24$$

$$\begin{aligned}
 1 \text{ part} &= \frac{24}{3} \\
 &= 8
 \end{aligned}$$

$$\text{Number of croissants} = 8 \text{ croissants}$$

$$\begin{aligned}\text{Number of beef pies} &= 2 \times \text{Number of croissants} \\ &= 2 \times 8 \\ &= 16 \text{ beef pies}\end{aligned}$$

b) What percentage of the pastries bought were cheese puffs? [1]

$$\begin{aligned}\% \text{ of pastries bought that were cheese puffs} &= \frac{\text{Number of cheese puffs}}{\text{Total number of pastries}} \times 100 \\ &= \frac{6}{30} \times 100 \\ &= \frac{1}{5} \times 100 \\ &= 20\%\end{aligned}$$

Answer: 20%

27) Four digits are shown below.

7

4

9

2

Using EACH digit only ONCE, write the

- a) LARGEST four-digit number [1]

To find the largest four-digit number, the digits need to be arranged in descending order of size, which is 9, 7, 4 and 2.

The largest four-digit number is 9742.

Answer: 9742

- b) SMALLEST four-digit odd number [1]

For the number to be odd, it can end in either 7 or 9. Therefore the 4th digit is 9 since we are trying to make the smallest odd number. We can then arrange the remaining numbers in ascending order of size which is 2, 4 and 7.

Therefore, the smallest four-digit odd number is 2479.

Answer: 2479

28) The product of two numbers is 6. One of them is $2\frac{2}{5}$.

What is the other number?

[2]

The product of the two numbers = 6

$$2\frac{2}{5} \times \text{the other number} = 6$$

$$\text{The other number} = 6 \div 2\frac{2}{5}$$

$$= 6 \div \frac{12}{5}$$

$$= \frac{6}{1} \times \frac{5}{12}$$

$$= \frac{30}{12}$$

$$= 2\frac{6}{12}$$

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

Answer: $2\frac{1}{2}$

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29) Anna bought 2 mints at 45¢ each and a bottle of water for \$4.50. What is her change from a \$10 note? [2]

$$\text{Cost of 1 mint} = 45\text{¢}$$

$$\begin{aligned} \text{Cost of 2 mints} &= 2 \times 45\text{¢} \\ &= 90\text{¢} \end{aligned}$$

$$\text{Cost of bottled water} = \$4.50$$

Total cost of items:

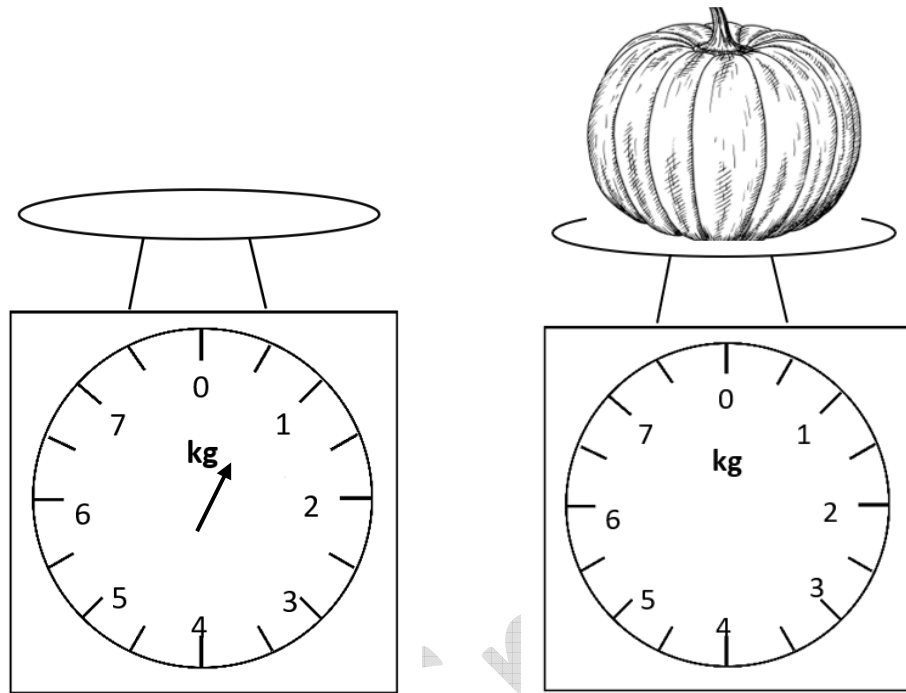
$$\begin{array}{r} \$ 4.50 \\ + \$.90 \\ \hline \$ 5.40 \\ \hline \end{array}$$

Anna's change from a \$10 note:

$$\begin{array}{r} \$ 10.00 \\ - \$ 5.40 \\ \hline \$ 4.60 \\ \hline \end{array}$$

Answer: \$4.60

30) A pumpkin weighing 4.5 kilograms is placed on the scale below.



a) Draw the new position of the pointer when the pumpkin is placed on the scale. [1]

New position of pointer = Initial Reading + Mass of pumpkin

$$= 0.5 + 4.5$$

$$= 5 \text{ kg}$$

b) What is the mass of the pumpkin to the NEAREST kilogram?

[2]

When rounding to the nearest kilogram, the most important figure that we must look at is number directly after the decimal point. Once that figure is 5 or more, then we round it up to the next kilogram. If it is 4 or less, then we round it down to the previous kilogram.

4	.	5
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For the question, the number directly after the decimal point in 4.5 kg is 5 so, we round up to the next kilogram.

Answer: 5 kg

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31) A handbag and four pairs of shoes together cost \$1350. The cost of each pair of shoes is \$285. Calculate the cost of the handbag. [2]

$$\text{Cost of 1 pair of shoes} = \$285$$

$$\begin{aligned}\text{Cost of 4 pairs of shoes} &= 4 \times \$285 \\ &= \$1140\end{aligned}$$

$$\begin{aligned}\text{Cost of the handbag} &= \text{Total bill} - \text{Cost of 4 pairs of shoes} \\ &= \$1350 - \$1140 \\ &= \$210\end{aligned}$$

Answer: \$210

Kerwin Springer

32) Sandra works 8 hour shifts per day and is paid \$15 per hour.

a) If she works for five days, calculate the total amount she is paid. [1]

Sandra works 8 hours each day.

In 5 days she worked: 5×8

$$= 40 \text{ hours}$$

Amount she was paid = Number of hours worked \times Hourly rate

$$= 40 \times \$15$$

$$= \$600$$

Answer: \$600

b) On weekends the hourly rate is 1.5 times the week-day rate. If she worked 8 hours on Saturday, how much was she paid for the day? [2]

Week-day rate = \$15 per hour

Week-end hourly rate = $1.5 \times \$15$

$$= \$22.50$$

Amount paid on Saturday = Number of hours worked \times Week-end hourly rate

$$= 8 \times \$22.50$$

$$= \$180$$

Answer: \$180

33) The marked price of a laptop was \$3200. A discount of 15% was offered by the store to boost sales.

a) Calculate the discount being offered. [1]

$$\begin{aligned}\text{Discount} &= \frac{15}{100} \times \$3200 \\ &= \$480\end{aligned}$$

Answer: \$480

b) Calculate the amount a customer would pay for the laptop after the discount was applied. [1]

$$\begin{aligned}\text{Cost price of laptop after discount} &= \text{Marked Price} - \text{Discount} \\ &= \$3200 - \$480 \\ &= \$2720\end{aligned}$$

Answer: \$2720

c) Janaye bought one of the laptops and later sold it for \$2584. Calculate her loss as a percentage of the cost price. [1]

$$\begin{aligned}\text{Loss} &= \text{Cost Price} - \text{Selling Price} \\ &= \$2720 - \$2584 \\ &= \$136\end{aligned}$$

$$\begin{aligned}\text{Loss as a percentage of the cost price} &= \frac{\text{Loss}}{\text{Cost Price}} \times 100 \\ &= \frac{136}{2720} \times 100 \\ &= 5\%\end{aligned}$$

Answer: 5%

34) The perimeter of a rectangle with a length of 16 m is 54 m.

a) Calculate the width of the rectangle.

[1]

$$\text{Perimeter of Rectangle} = 2L + 2W \times (L+W)$$

$$54 \text{ m} = (2 \times 16) + (2 \times W)$$

$$54 \text{ m} = 32 + 2W$$

$$2W = 54 - 32$$

$$2W = 22$$

$$W = \frac{22}{2}$$

$$= 11 \text{ m}$$

Answer: 11 m

b) Calculate the area of the rectangle.

[1]

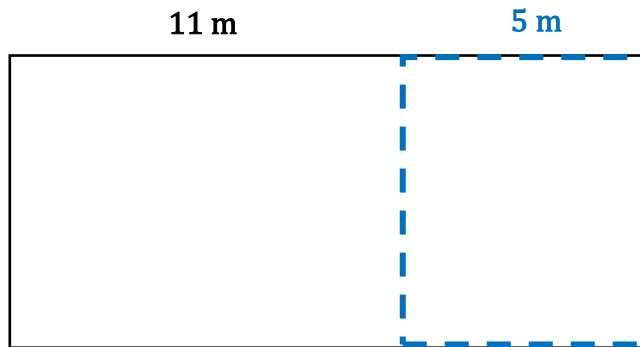
$$\text{Area of Rectangle} = \text{Length} \times \text{Width}$$

$$= 16 \times 11$$

$$= 176 \text{ m}^2$$

Answer: 176 m²

- c) If a rectangle of length 5 m was cut from the rectangle as shown below. What would be the area of the new shape? [1]

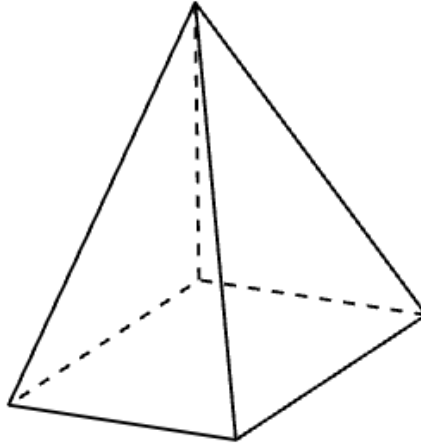


The new shape is a square.

$$\begin{aligned}
 \text{Area of Square} &= S \times S \\
 &= 11 \times 11 \\
 &= 121 \text{ m}^2
 \end{aligned}$$


Answer: 121 m²

35) The diagram below shows a square based pyramid.

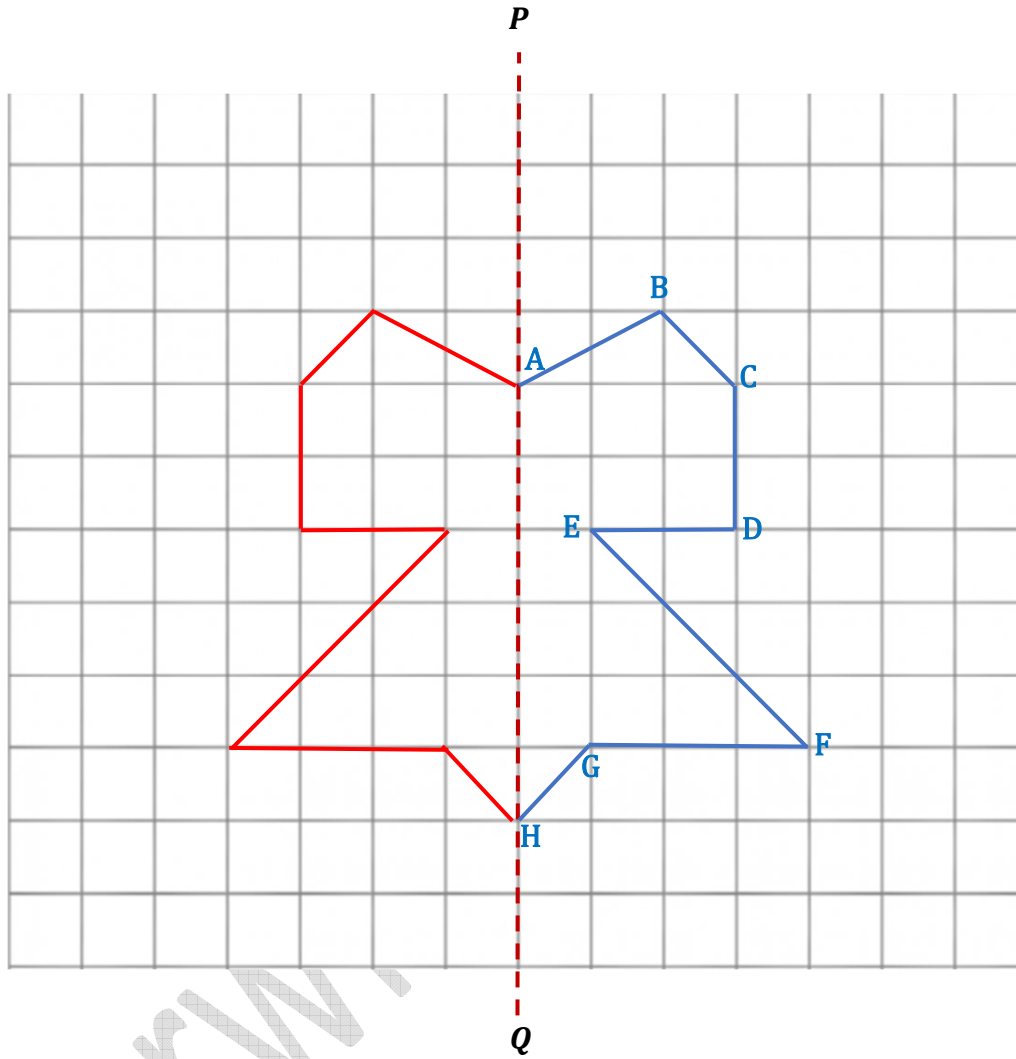


Complete the following table based on the diagram above.

[3]

Drawing of Solid's Faces	Number of Faces	Number of Edges	Number of Vertices
	5	8	5

36) Draw the image of the shape ABCDEFGH such that PQ is a line of symmetry. [3]



Kerwin

SECTION III

37) Mrs. Brown bought a box of bananas. 65% of the bananas were ripe, 75% of the remainder was green and the rest were over-ripe and had to be thrown away. The box contained 240 bananas.

a) How many bananas were ripe? [1]

$$\begin{aligned} \text{Number of ripe bananas} &= \frac{\text{Percentage of ripe bananas}}{100} \times \text{Total number of bananas} \\ &= \frac{65}{100} \times 240 \\ &= 156 \text{ bananas} \end{aligned}$$

Answer: 156 bananas

b) How many bananas had to be thrown away? [1]

$$\begin{aligned} \text{Number of remaining bananas} &= 240 - 156 \\ &= 84 \text{ bananas} \end{aligned}$$

$$\begin{aligned} \text{Percentage of the remaining bananas that had to be thrown away} &= 100\% - 75\% \\ &= 25\% \end{aligned}$$

Number of bananas to be thrown away:

$$\begin{aligned} &= \frac{\text{Percentage of the remaining bananas to be thrown away}}{100} \times \text{Number of remaining bananas} \\ &= \frac{25}{100} \times 84 \\ &= 21 \text{ bananas} \end{aligned}$$

Answer: 21 bananas

c) Mrs. Brown paid \$180 for the box of bananas. Calculate the amount of money she lost. [2]

Total number of bananas in box = 240 bananas

Cost of box of bananas = \$180

$$\begin{aligned}\text{Cost of 1 banana} &= \frac{\text{Cost of box of bananas}}{\text{Total number of bananas in box}} \\ &= \frac{\$180}{240} \\ &= \$0.75\end{aligned}$$

$$\begin{aligned}\text{Amount of money lost} &= \text{Number of bananas thrown away} \times \text{Cost of 1 banana} \\ &= 21 \times \$0.75 \\ &= \$15.75\end{aligned}$$

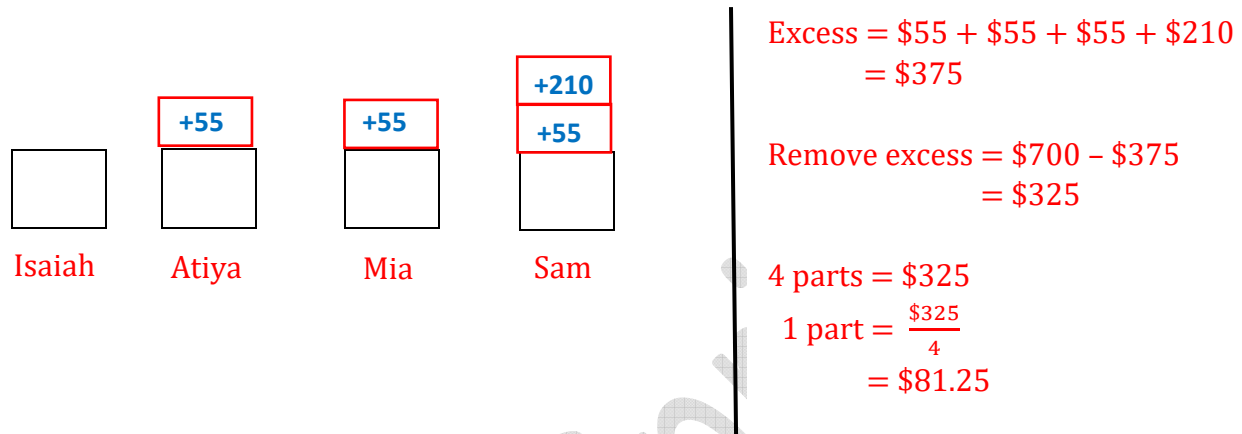
Answer: \$15.75

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38) Sam, Mia, Atiya and Isaiah shared \$700 among themselves. Sam received \$210 more than Mia, Mia received the same amount as Atiya and Isaiah got \$55 less than Atiya.

How much money did each person get?

[4]



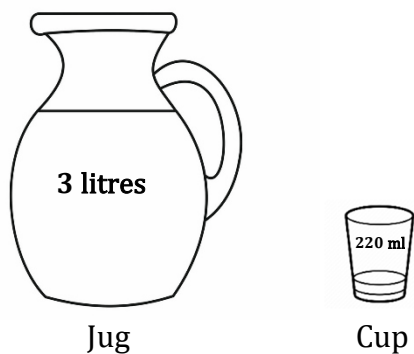
Amount of money Isaiah got = $\$81.25$

Amount of money Atiya got = $\$81.25 + \55
= $\$136.25$

Amount of money Mia got = Amount of money Atiya got
= $\$136.25$

Amount of money Sam got = $\$81.25 + \$55 + \$210$
= $\$346.25$

39) The jug shown in the diagram below holds 3 litres of juice when full.



Giovanna fills 6 glasses with 220 ml each of juice.

a) How many millilitres of juice is left in the jug?

[2]

$$1 \text{ glass} = 220 \text{ ml juice}$$

$$6 \text{ glasses} = 6 \times 220$$

$$= 1320 \text{ ml juice}$$

$$\text{Volume of the juice in the jug} = 3 \text{ litres}$$

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

$$\therefore \text{Volume of the juice in the jug} = 3 \times 1000$$

$$= 3000 \text{ ml juice}$$

$$\text{Remaining volume of juice in the jug} = 3000 - 1320$$

$$= 1680 \text{ ml juice}$$

Answer: 1680 ml

b) How many MORE full glasses can she pour from the remaining juice? [2]

Remaining volume of juice in the jug = 1680 ml

Volume of juice in one cup = 220 ml

∴ The number of cups that can be filled from the remaining juice = $\frac{\text{Remaining volume}}{\text{Volume of cup}}$

7 rem 140 ml

$= \frac{1680}{220}$

$= 7$

= 7 cups

Answer: 7 cups

Kerwin Spring

40) The table below shows the weight of students in Group C in Standard 5.

Student	Weight (kg)
Sadie	39
Nirvan	43
K'hill	45
Patrick	39
Shaquille	66
Daniel	56

a) What is the modal weight?

[1]

Modal means the one that occurs most often.

Based on the table above, the modal weight is 39 kg as it occurred twice and all the other weights occurred once.

Answer: 39 kg

b) Calculate the mean weight of the students.

[1]

$$\begin{aligned} \text{Total weight of the students} &= 39 + 43 + 45 + 39 + 66 + 56 \\ &= 288 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Mean weight of the students} &= \frac{\text{Total weight of the students}}{6} \\ &= \frac{288}{6} \\ &= 48 \text{ kg} \end{aligned}$$

Answer: 48 kg

c) If Nirvan left the group, what is the new mean weight of the students? [2]

$$\begin{aligned}\text{New total weight of the students} &= 288 - 43 \\ &= 245 \text{ kg}\end{aligned}$$

$$\begin{aligned}\text{New mean weight of the students} &= \frac{\text{New total weight of the students}}{5} \\ &= \frac{245}{5} \\ &= 49 \text{ kg}\end{aligned}$$

Answer: 49 kg

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