



Subject: Grade 7 Mathematics

Topic: Mathematics: Term 2 - Exam 1

Total: 98 Marks

1. 120

4 marks

Explanation:

$$\begin{aligned}\text{Sour worms: } \frac{7}{12} \text{ of } 480 &= \frac{7}{12} \times \frac{480}{1} \\ &= \frac{7 \times 480}{12} \\ &= \frac{3\,360}{12} \\ &= 280\end{aligned}$$

$$\text{Fruit chews: } 480 - 280 = 200$$

$$\begin{aligned}\frac{3}{5} \text{ of } 200 &= \frac{3}{5} \times \frac{200}{1} \\ &= \frac{3 \times 200}{5} \\ &= \frac{600}{5} \\ &= 120\end{aligned}$$

2. 2 | two

3 marks

Explanation:

$$\begin{aligned}5\% \text{ of } 40 &= \frac{5}{100} \times \frac{40}{1} \\ &= \frac{5 \times 40}{100} \\ &= \frac{200}{100} \\ &= 2\end{aligned}$$

Therefore, 2 of the 40 children play rugby.



3. false

2 marks

Explanation:

Use a practical example to test this statement.

Let the measurements of the rectangle be 8cm by 2cm.

Then:

$$\begin{aligned}\text{Area} &= \text{length} \times \text{breadth} \\ &= 8\text{cm} \times 2\text{cm} \\ &= 16\text{cm}^2\end{aligned}$$

And:

$$\begin{aligned}P &= 2(8\text{cm} + 2\text{cm}) \\ &= 20\text{cm}\end{aligned}$$

Let the measurements of the square be 4cm by 4cm.

Then:

$$\begin{aligned}\text{Area} &= \text{side}^2 \\ &= 4\text{cm} \times 4\text{cm} \\ &= 16\text{cm}^2\end{aligned}$$

And:

$$\begin{aligned}P &= 4 \times 4\text{cm} \\ &= 16\text{cm}\end{aligned}$$

The perimeters of these two figures are not equal!

4. 11°C | 15°C | 24°C

6 marks

Explanation:

1. $11^\circ\text{C} - 11^\circ\text{C} = 0^\circ\text{C}$

The temperature must decrease by 11°C just to reach 0°C.

2. The temperature must decrease a further 4°C from 0°C.

Thus:

$$\text{Total decrease} = 11^\circ\text{C} + 4^\circ\text{C} = 15^\circ\text{C}$$

3. The temperature must decrease a further 13 °C from 0 °C.

Thus:

$$\text{Total decrease} = 11^\circ\text{C} + 13^\circ\text{C} = 24^\circ\text{C}$$



5. true

2 marks

Explanation:

$$\frac{3}{8} = 0,375$$

$$37,5\% = \frac{37,5}{100}$$
$$= 0,375$$

Therefore:

$$\frac{3}{8} = 37,5\%$$

6. 7cm | 30cm

4 marks

Explanation:

$$\text{Area} = \text{length} \times \text{breadth}$$

1. $\therefore 56\text{cm}^2 = 8\text{cm} \times \text{breadth}$
 $\therefore 56\text{cm}^2 \div 8\text{cm} = \text{breadth}$
 $\therefore 7\text{cm} = \text{breadth}$

2. $\text{Perimeter} = 2 \times (\text{length} + \text{breadth})$
 $= 2 \times (8\text{cm} + 7\text{cm})$
 $= 2 \times (15\text{cm})$
 $= 30\text{cm}$

7. + | - | $\times$

6 marks

Explanation:

+, -, $\times$ and $\div$ are operational signs.

1. $54 + 6 = 60$

2. $54 - 6 = 48$

3. $54 \times 6 = 324$

8. D: +7; 4; 0; -6; -7; -11

2 marks

Explanation:

Arrange the numbers from biggest to smallest:

-11 lies to the left on a number line.

To its right lies -7, then -6, then 0, 4 and +7.

Hence the correct order will be:

+7; 4; 0; -6; -7; -11

9. A: 8,919

4 marks

Explanation:

$$\begin{aligned} & 3,168 + 4,26 \times (3,24 \div 2,4) \\ &= 3,168 + 4,26 \times 1,35 \\ &= 3,168 + (4,26 \times 1,35) \\ &= 3,168 + 5,751 \\ &= 8,919 \end{aligned}$$

10. 0% | 100% | 200%

6 marks

Explanation:

(1) If there is no inflation, the prices remain unchanged.

$$\begin{aligned} (2) \% \text{ increase} &= \frac{\text{change in price}}{\text{original price}} \times \frac{100}{1} \% \\ &= \frac{100 - 50}{50} \times \frac{100}{1} \% \\ &= \frac{50}{50} \times \frac{100}{1} \% \\ &= 100\% \end{aligned}$$

$$\begin{aligned} (3) \% \text{ increase} &= \frac{\text{change in price}}{\text{original price}} \times \frac{100}{1} \% \\ &= \frac{150 - 50}{50} \times \frac{100}{1} \% \\ &= \frac{100}{50} \times \frac{100}{1} \% \\ &= 200\% \end{aligned}$$

11. 623 | 623,0

3 marks

Explanation:

$0,0623 \times 10 = 0,623$ [decimal comma moves one place to the right]

$0,0623 \times 100 = 6,23$ [decimal comma moves two places to the right]

$0,0623 \times 1\,000 = 62,3$ [decimal comma moves three places to the right]

$0,0623 \times 10\,000 = 623$ [decimal comma moves four places to the right]

12. irrational | rational | 6

6 marks

Explanation:

1) $\sqrt{2} = 1,414\,213\,562 \dots$

There is no recurring pattern and it does not end, so it is irrational.

2) $\frac{2}{7} = 0,285\,714\,285\,714 \dots$

There is a recurring pattern and it does not end, so it is rational.

3) The first six digits in the decimal part are repeated.

13. A: $3 \times 3 \times 3 \times 3$

3 marks

Explanation:

The factors of 81 are 1; 3; 9; 27; 81

1 is not a prime number.

9; 27 and 81 are not prime numbers because more numbers than 1 and itself can be divided into these numbers, eg. 1; 3 and 9 can be divided equally into 9.

$9 = 3 \times 3$ (3 is a prime number)

$9 \times 9 = 3 \times 3 \times 3 \times 3$ or 3^4

14. 2 | +2

1 mark

Explanation:

In an arithmetic series, the difference between the successive terms is the same.

The difference between the first and second terms:

$$(-2) - (-4) = -2 + 4 = 2$$

The difference between the second and third terms:

$$0 - (-2) = 0 + 2 = 2$$

Therefore, 2 is added to each of the terms to get the next term.

The fourth term of this series will be:

$$0 + 2 = 2$$

15. greater | bigger | more | larger

1 mark

Explanation:

An improper fraction has a numerator that is bigger than the denominator.

The reciprocal of an improper fraction will be an proper fraction.

16. 526

3 marks

Explanation:

White region:

$$\begin{aligned}\text{Area of A} &= 11\text{m} \times 12\text{m} \\ &= 132\text{m}^2\end{aligned}$$

$$\begin{aligned}\text{Area of B} &= 14\text{m} \times 3\text{m} \\ &= 42\text{m}^2\end{aligned}$$

$$\begin{aligned}\text{Total area of white region} &= 132\text{m}^2 + 42\text{m}^2 \\ &= 174\text{m}^2\end{aligned}$$

Orange region:

$$\begin{aligned}\text{Area of big rectangle} &= 20\text{m} \times 35\text{m} \\ &= 700\text{m}^2\end{aligned}$$

$$\begin{aligned}\text{Area of orange region} &= \text{Area of big rectangle} - \text{Area of white region} \\ &= 700\text{m}^2 - 174\text{m}^2 \\ &= 526\text{m}^2\end{aligned}$$

17. true

1 mark

Explanation:

The diagonals bisect each other perpendicularly (at 90°).

18. A: R22

4 marks

Explanation:

T-shirt:

$$\begin{aligned}\frac{1}{3} \times R165 &= \frac{1}{3} \times \frac{165}{1} \\ &= \frac{165}{3} \\ &= R55\end{aligned}$$

Cap:

$$\begin{aligned}R165 - R55 &= R110 \\ \frac{4}{5} \text{ of } R110 &= \frac{4}{5} \times \frac{110}{1} \\ &= \frac{440}{5} \\ &= R88\end{aligned}$$

$$\begin{aligned}\text{Amount left} &= R110 - R88 \\ &= R22\end{aligned}$$

19. B: supplement

1 mark

Explanation:

An angle and its complement give a sum of 90° .

An angle and its supplement give a sum of 180° .

The sum of the two angles will determine if they are complementary or supplementary.

$$35^\circ + 145^\circ = 180^\circ$$

These two angles are therefore supplementary.

20. 13 | -8 | 98

6 marks

Explanation:

1. Add 2 each time:

$$11 + 2 = 13$$

2. Subtract 2 each time:

$$-6 - 2 = -8$$

3. Subtract 4 each time:

$$102 - 4 = 98$$

21. 367 000

3 marks

Explanation:

$$\begin{aligned}1\text{m}^2 &= 1\text{m} \times 1\text{m} \\&= 1\,000\text{mm} \times 1\,000\text{mm} \\&= 1\,000\,000\text{mm}^2\end{aligned}$$

Then:

$$\begin{aligned}0,367\text{m}^2 &= 0,367 \times 1\,000\,000\text{mm}^2 \\&= 367\,000\text{mm}^2\end{aligned}$$

22. A: 4

4 marks

Explanation:

$$\begin{aligned}3\frac{1}{4} - 1\frac{2}{3} + 2\frac{5}{12} \\&= \frac{13}{4} - \frac{5}{3} + \frac{29}{12} \\&= \frac{39}{12} - \frac{20}{12} + \frac{29}{12} \\&= \frac{48}{12} \\&= 4\end{aligned}$$

23. false

1 mark

Explanation:

1, 2, 3, 4, 6, 8, 12, 16, 24 and 48 can be divided into 48 without leaving a remainder.

Therefore the number 48 has ten factors.

24. 0,55 | 0.55

2 marks

Explanation:

$$\begin{aligned}\frac{11}{20} &= \frac{11 \times 5}{20 \times 5} \\&= \frac{55}{100} \\&= 0,55\end{aligned}$$

When writing decimal numbers, or rands and cents, you must use a comma and not a full stop.

25. 8 144,123 | 37,255

4 marks

Explanation:

$$\begin{aligned} & 1. 1,345\text{km} + 6\,789\text{m} + 10\,123\text{mm} \\ & = 1\,345\text{m} + 6\,789\text{m} + 10,123\text{m} \\ & = 8\,144,123\text{m} \end{aligned}$$

$$\begin{aligned} & 2. 2,3\text{km} + 34\,400\text{m} + 555\,000\text{mm} \\ & = 2,3\text{km} + 34,4\text{km} + 0,555\text{km} \\ & = 37,255\text{km} \end{aligned}$$

26. true

2 marks

Explanation:

If 70% of them love spaghetti, 30% [100% - 70%] do not eat spaghetti.

Therefore:

$$\begin{aligned} 30\% \text{ of } 40 &= \frac{30}{100} \times \frac{40}{1} \\ &= \frac{1\,200}{100} \\ &= 12 \end{aligned}$$

27. false

2 marks

Explanation:

To determine if a year is a leap year, divide the year by 4.

If the year is divisible by 4, i.e. there is no remainder, the year will be a leap year.

However, if it is a centurial year, it must also be divisible by 400.

1900 is divisible by 4, but not by 400. It was therefore not a leap year.

28. 67 | 73

4 marks

Explanation:

This is a list of the odd numbers greater than 60, so the value of the terms increase by 2 every time.

29. A: $1\frac{1}{4}$

4 marks

Explanation:

$$125\% = \frac{125}{100}$$

$$= \frac{125 \div 25}{100 \div 25}$$

$$= \frac{5}{4}$$

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

30. B: 1,5kg packet

4 marks

Explanation:

$$R10,60 \div 5\text{kg} = R2,12 \text{ per kg}$$

$$R4,15 \div 2\text{kg} = R2,08 \text{ per kg}$$

$$R2,80 \div 1,5\text{kg} = R1,87 \text{ per kg}$$

So the most cost effective packet to buy is the 1,5kg packet.

Total: 98 Marks