



Subject: Grade 8 Mathematics

Topic: Mathematics: Term 2 - Exam 1

Total: 103 Marks

1. base

3 marks

Explanation:

5 is called the **base** and 3 is called the **exponent**.

2. -10

3 marks

Explanation:

To change a fraction or proportion to an equivalent fraction or proportion, the numerator and denominator must be multiplied or divided by the same value.

Therefore:

$$\begin{aligned}\frac{-9}{30} &= \frac{(-9) \div (-3)}{30 \div (-3)} \\ &= \frac{3}{-10}\end{aligned}$$

The value of x in the given proportion will be equal to -10.

3. R180 | R300

4 marks

Explanation:

First calculate the interest:

$$i = P \times r \times t$$

$$i = R120 \times \frac{15}{100} \times 10 = R180$$

Next, calculate the final value of the investment by adding the principal amount to the interest.

$$\text{Final value} = R120 + R180 = R300$$

4. A: **108°**

4 marks

Explanation:

Co-interior angles between parallel lines are supplementary to each other, which means they add up to **180°**.

Co-interior angles are not equal to each other.

$$\text{Therefore: } 180^\circ - 72^\circ = 108^\circ$$



5. A: 5^7

4 marks

Explanation:

The best way to understand the answer is to write out the given expression the long way:

$$\begin{aligned}5^3 \times 5^3 \times 5 &= (5 \times 5 \times 5) \times (5 \times 5 \times 5) \times 5 \\&= 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 \\&= 5^7\end{aligned}$$

This means 5 is multiplied with itself 7 times over.

6. 17

3 marks

Explanation:

$$\begin{aligned}&-a + bc - c \\&= -(-5) + (-3)(-3) - (-3) \quad [a = -5; b = c = -3] \\&= +5 + (+9) + 3 \\&= 5 + 9 + 3 \\&= 17\end{aligned}$$

7. 90 | 90° | 90 degrees

3 marks

Explanation:

AC and BD are perpendicular to each other and intersect at **right angles**.

8. C: 45°

4 marks

Explanation:

Diagonal AC bisects angle C. This means that the line cuts the angle in half.

$$\begin{aligned}\hat{C} &= 90^\circ \\90^\circ \div 2 &= 45^\circ \\D\hat{C}F &= 45\end{aligned}$$

9. false

2 marks

Explanation:

6 is not a prime number!

$$54 = 2 \times 3^3$$

10. remove the brackets | subtract like terms | add 12 to | $x = 11$

8 marks

Explanation:

$$\begin{aligned}10 &= 4x - (2x + 12) \\ \therefore 10 &= 4x - 2x - 12 \text{ [brackets removed]} \\ \therefore 10 &= 2x - 12 \text{ [like terms added]} \\ \therefore 10 + 12 &= 2x \text{ [12 added to both sides]} \\ \therefore 22 &= 2x \\ \therefore 11 &= x\end{aligned}$$

11. -7

3 marks

Explanation:

$$\begin{aligned}&dy - d^3 - y^2 \\ &= (-2)(-5) - (-2)^3 - (-5)^2 \text{ [} d = -2; y = -5 \text{]} \\ &= 10 - (-8) - (+25) \\ &= 10 + 8 - 25 \\ &= -7\end{aligned}$$

12. A: 4

2 marks

Explanation:

$$\begin{aligned}&1,88 \times 6,43 \div 3,08 \\ &\approx 2 \times 6 \div 3 \\ &= 12 \div 3 \\ &= 4\end{aligned}$$

13. false

2 marks

Explanation:

$$\begin{aligned}y + 5 &= 3 \\ \therefore y &= 3 - 5 \\ \therefore y &= -2\end{aligned}$$

Solutions may be negative or even fractions.

14. > | Infinite

4 marks

Explanation:

1.

$$\frac{22}{7} = 3,142\ 85\dots$$

$$\pi = 3,141\ 59\dots$$

Therefore: $\frac{22}{7} > \pi$

2. π is an infinite decimal.

15. C: **6,4m × 9,6m**

4 marks

Explanation:

$$8\text{cm} \times 80 = 640\text{cm}$$

$$= 6,4\text{m}$$

$$12\text{cm} \times 80 = 960\text{cm}$$

$$= 9,6\text{m}$$

16. false

2 marks

Explanation:

$$500\text{g} = \frac{1}{2}\text{kg}$$

Now:

$$12\text{kg} \div \frac{1}{2}\text{kg} = 12 \times \frac{2}{1}$$

$$= 24$$

17. false

4 marks

Explanation:

$$\frac{5m}{3} + 5 = \frac{4m}{5} + 2$$

$$\therefore 5(5m) + 75 = 3(4m) + 30 \quad [\times 15]$$

$$\therefore 25m - 12m = 30 - 75$$

$$\therefore 13m = -45$$

$$\therefore m = -3,46$$

Answer is rounded off to the nearest hundredth.

18. 10

3 marks

Explanation:

Alternate angles are equal if they lie between parallel lines.

Therefore:

$$3x = x + 20^\circ \quad [\text{alternate } \angle\text{'s; parallel lines}]$$

$$\therefore 2x = 20^\circ$$

$$\therefore x = 10^\circ$$

19. true

2 marks

Explanation:

$$5 \times 1 = 5$$

$$5 \div 1 = 5$$

$$5^1 = 5$$

20. 384

3 marks

Explanation:

$$\text{Volume} = (\text{side})^3$$

$$\therefore 512 = (\text{side})^3$$

$$\therefore \sqrt[3]{512} = \text{side}$$

$$\therefore 8\text{cm} = \text{side}$$

Now:

$$\text{Area of one face} = 8\text{cm} \times 8\text{cm}$$

$$= 64\text{cm}^2$$

A cube has six equal faces.

Then:

$$\text{Area of all six faces} = 6 \times 64\text{cm}^2$$

$$= 384\text{cm}^2$$

21. $2 \times 3 \times 13$ | 2.3.13 | 2;3;13 | $2 \times 3 \times 13$

3 marks

Explanation:

$$\begin{array}{r|l} 2 & 78 \\ 3 & 39 \\ 13 & 13 \\ & 1 \end{array}$$

Therefore:

$$78 = 2 \times 3 \times 13$$

22. 290° | 110°

4 marks

Explanation:

1) Angles around a point total **360°** .

Therefore:

$$m + 70^\circ = 360^\circ \quad [\text{revolution}]$$

$$\therefore m = 360^\circ - 70^\circ$$

$$\therefore m = 290^\circ$$

2) Co-interior angles give a sum of **180°** if they lie between parallel lines.

Therefore:

$$n + 70^\circ = 180^\circ \quad [\text{co-interior } \angle\text{s; parallel lines}]$$

$$\therefore n = 180^\circ - 70^\circ$$

$$\therefore n = 110^\circ$$

23. total money coming in | expenditure

4 marks

Explanation:

When money coming in, such as income, is higher than expenditure, a business will make a profit.

24. D: 8^2

4 marks

Explanation:

$$4^3 = 8^2 = 64$$

25. true

2 marks

Explanation:

$$12\,540 = 1,254 \times 10\,000$$

$$= 1,254 \times 10 \times 10 \times 10 \times 10$$

$$= 1,254 \times 10^4$$

26. 20 | 40

4 marks

Explanation:

First convert the kilometres and hours into metres and seconds.

$$72\text{ km} = 72\,000\text{ m}$$

$$144\text{ km} = 144\,000\text{ m}$$

One hour has 3 600 seconds.

Then divide the metres by the seconds to get the unit rate of metres per second.

$$72\,000\text{ m} \div 3\,600\text{ s} = 20\text{ m/s}$$

$$144\,000\text{ m} \div 3\,600\text{ s} = 40\text{ m/s}$$

27. a positive number | zero | The sign cannot be determined!

6 marks

Explanation:

1. "Zero subtracting negative" is the same as "zero adding positives".

E.g.: $0 - (-8) = 0 + 8$

2. The product of 0 and any number will always be 0.

3. Division by 0 cannot be done.

28. true

2 marks

Explanation:

$$2 \times 3 \times 3 \times 3 = 54$$

$$2 \times 9 \times 3 = 54$$

29. 6 | six | 2 | two

3 marks

Explanation:

Even numbers are divisible by 2. $6 = 2 \times 3$

Therefore, if a number is even and divisible by 3, it will be divisible by 6.

If both 2 and 3 are factors of a number, then their product, i. e. 6, is also a factor of that number.

30. A: 25°

4 marks

Explanation:

$$x + x + (x + 40^\circ) + (3x - 10^\circ) = 180^\circ \quad [\text{sum angles on a line}]$$

$$6x + 30^\circ = 180^\circ$$

$$6x = 150^\circ$$

$$x = 25^\circ$$

Total: 103 Marks