

IGCSE Mathematics

Name: _____ Score: _____

1. Which of these is a prime number?

☐ 13☐ 1☐ 9☐ 152. $A = \{2, 4, 6, 8, 10\}$ and $B = \{3, 6, 9\}$. How many elements are in $A \cap B$?

3. Work out $5^2 \times \sqrt[3]{8}$.

4. Write 4 500 000 as $A \times 10^n$. What is the power n ?

5. Simplify $\sqrt{20}$ into the form $k\sqrt{5}$. What is k ?

6. Write $3/8$ as a decimal.

7. Which surd rule is correct?

☐ $\sqrt{a} \times \sqrt{b} = \sqrt{ab}$ ☐ $\sqrt{a} + \sqrt{b} = \sqrt{a+b}$ ☐ $\sqrt{a} \times \sqrt{b} = \sqrt{a+b}$ ☐ $\sqrt{a/b} = \sqrt{a} \times \sqrt{b}$ 8. The symbol $\cap$ means:☐ intersection (in both sets)☐ union (in either set)☐ complement (not in the set)☐ empty set9. What is $2/3 \times 4/5$?☐ $8/15$

☐ $6/8$

☐ $8/8$

☐ $2/15$

10. Depreciation of a car's value each year is an example of:

☐ exponential decay

☐ exponential growth

☐ simple interest

☐ linear growth

1. **13**

13 has exactly two factors (1 and 13). 1 is not prime; $9 = 3 \times 3$; $15 = 3 \times 5$.

2. **1**

Only 6 is in both sets, so $A \cap B = \{6\}$, which has 1 element.

3. **50**

$5^2 = 25$ and $\sqrt[3]{8} = 2$, so $25 \times 2 = 50$.

4. **6**

$4\,500\,000 = 4.5 \times 10^6$, so $n = 6$.

5. **2**

$\sqrt{20} = \sqrt{(4 \times 5)} = \sqrt{4} \times \sqrt{5} = 2\sqrt{5}$, so $k = 2$.

6. **0.375**

$3 \div 8 = 0.375$.

7. **$\sqrt{a} \times \sqrt{b} = \sqrt{ab}$**

$\sqrt{a} \times \sqrt{b} = \sqrt{ab}$; roots do not add like $\sqrt{a} + \sqrt{b} = \sqrt{a+b}$.

8. **intersection (in both sets)**

$\cap$ is intersection (elements in both A and B); $\cup$ is union.

9. **8/15**

Multiply tops and bottoms: $(2 \times 4)/(3 \times 5) = 8/15$.

10. **exponential decay**

Losing a fixed percentage each year is exponential decay (multiplier < 1 , applied repeatedly).