1. Which of these is a prime number?

   ☐ 13

   ☐ 9

   ☐ 15

   ☐ 1

2. A = {2,4,6,8,10} and B = {3,6,9}. How many elements are in A ∩ 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. A 20% decrease corresponds to which multiplier?

   ☐ 0.80

   ☐ 0.02

   ☐ 0.20

   ☐ 1.20

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

   ☐ linear growth

   ☐ exponential growth

   ☐ simple interest

   ☐ exponential decay

9. What is the ratio 24:36 in its simplest form?

   ☐ 2:3



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   ☐ 12:18

   ☐ 3:2

10. What is 3.15 p.m. on the 24-hour clock?

    ☐ 03 15

    ☐ 15 50

    ☐ 13 15

    ☐ 15 15

1. **13**

   13 has exactly two factors (1 and 13). 1 is not prime; $9 = 3\times3$; $15 = 3\times5$.

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**

   $\sqrt{20} = \sqrt{(4\times5)} = \sqrt{4} \times \sqrt{5} = 2\sqrt{5}$, so k = 2.

6. **0.375**

   $3 \div 8 = 0.375$.

7. **0.80**

   Losing 20% leaves 80%, so the multiplier is 0.80.

8. **exponential decay**

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

9. **2:3**

   HCF of 24 and 36 is 12. $24\div12 = 2$, $36\div12 = 3$. Simplest form: 2:3.

10. **15 15**

    Add 12 hours to the afternoon time: 3.15 p.m. = 15 15.



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