Year 8 Prime Factors and Rounding – Challenge

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Answers and worked solutions · 8 questions

A. Think like a mathematician

1. **No. A prime has exactly two factors; 1 has only one factor, so it is not prime.**
   Try an example
   A prime has exactly two factors; 1 has only one factor, so it is not prime.
   Decide

2. **Yes. 0.1 = 1/10, so × 0.1 means × 1/10, which is ÷ 10.**
   Try an example
   0.1 = 1/10, so × 0.1 means × 1/10, which is ÷ 10.
   Decide

3. **Yes. ÷ 0.01 is the same as × 100, so a positive number becomes 100 times bigger.**
   Try an example
   ÷ 0.01 is the same as × 100, so a positive number becomes 100 times bigger.
   Decide

4. **15 is not prime. $90 = 2 \times 3^2 \times 5$.**
   Error: the factors are not all prime
   Keep splitting until every factor is prime
   $90 = 2 \times 3^2 \times 5$

5. **Dividing by 0.1 is the same as multiplying by 10: 6.6 ÷ 0.1 = 66.**
   Error: ÷ 0.1 was treated as ÷ 10
   ÷ 0.1 = × 10
   = 66

6. **Leading zeros are not significant: start counting at the first non-zero digit. 0.0034927 = 0.0035 (2 s.f.).**
   Error: the zeros after the decimal point were counted
   The first significant figure is the first non-zero digit
   = 0.0035

7. **48 minutes**
   $12 = 2^2 \times 3$, $16 = 2^4$, $24 = 2^3 \times 3$
   LCM = $2^4 \times 3 = 48$

8. **3.15**
   ≈ (70 × 0.09) ÷ 2
   = 6.3 ÷ 2 = 3.15