Day 275 **A Tier 10-a-day**

1 Write 1100 as a product of prime factors, in index form.

2 Expand and simplify
$(3x - 2)(x + 6) + (x + 1)^2$

3 The stem and leaf diagram shows the ages of 11 people.
Key: 2 | 4 represents 24 years
(a) Work out the median age.
(b) Work out the interquartile range.

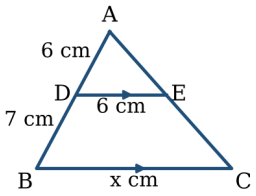
Stem	Leaf
2	4
3	6 8 9
4	3 6 7 8 9
5	3 7

4 A roll of ribbon is $12\frac{1}{2}$ metres long. Pieces of $\frac{5}{6}$ metre are cut from it.
How many pieces can be cut?

5 A culture starts with 2500 bacteria. (Calculator)
The number of bacteria increases by 8% every hour.
Work out the number of bacteria after 2 hours.
Give your answer to the nearest whole number.

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6 In triangle ABC, DE is parallel to BC.
D is on AB and E is on AC.
Work out the value of x.
The diagram is not drawn accurately.



7 Simplify fully

$$\frac{x^2 - 3x + 2}{x^2 - 1}$$

8 A regular pentagon and a regular dodecagon share the side AB and are on opposite sides of it.
The two shapes meet at the point A.
Work out the size of the angle at A that is not inside either shape.

9 Write $0.2\dot{9}\dot{3}$ as a fraction in its simplest form.

10 Priya is x years old.
Her aunt is 4 times as old as Priya, plus 5 years.
The sum of their ages is 80 years.
Work out how old her aunt is.