There are **7 questions** in this test. Give yourself **10 minutes** to answer them all.
You may use a calculator for this test.

1. A sequence starts with the numbers 2, 9, 16, 23. Circle the next term in the sequence.

   24   25   30   33

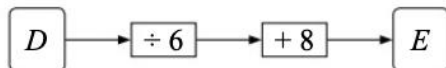   [1]

2. Circle the solution to the inequality $5x - 1 < 9$.

   $x \leq 2$ $x < 2$ $x > 2$ $x \geq 2$

   [1]

3. Simplify $x + (x^2 \times x^3) + x^5$. Do **not** factorise your expression.

   ....
   [1]

4. Look at this function machine:

   D → $\div 6$ → $+ 8$ → E

   Find the value of D when $E = 20$.

   $D =$ ....
   [1]

5. Expand and simplify $(2x + 9)^2$.

   ....
   [2]

6. Solve the equation $2x = \dfrac{x - 3}{2}$.

   $x =$ ....
   [2]

7. Mauritz lives in Oslo and his friend Diane lives in London.
   They both travel to a meeting point somewhere between them to see each other.

   Diane's journey is $\dfrac{9}{14}$ the distance of Mauritz's journey.
   The distance that the two of them travel in total is 1150 miles.

   Determine how far Mauritz and Diane each travel to reach the meeting point.

   Mauritz: .... miles

   Diane: .... miles
   [4]

   / **12**

Test 10 — Pages 20–21

1. Difference is 7 so the next term
   is $23 + 7 = 30$ *[1 mark]*.

2. $5x - 1 < 9 \implies 5x < 10$
   $\implies x < 2$ *[1 mark]*

3. $x + (x^2 \times x^3) + x^5$
   $= x + x^5 + x^5 = x + 2x^5$ *[1 mark]*

4. $20 - 8 = 12$
   $12 \times 6 = 72$, so $D = 72$ *[1 mark]*

5. $(2x + 9)^2 = (2x + 9)(2x + 9)$
   $= (2x \times 2x) + (2x \times 9)$
   $\qquad + (9 \times 2x) + (9 \times 9)$ *[1 mark]*
   $= 4x^2 + 18x + 18x + 81$
   $= 4x^2 + 36x + 81$ *[1 mark]*

6. $2x = \frac{x-3}{2} \implies 4x = x - 3$ *[1 mark]*
   $\implies 3x = -3 \implies x = -1$ *[1 mark]*

7. Let m = Mauritz's distance and
   d = Diane's distance.
   $d = \frac{9}{14}m$ and $m + d = 1150$
   [1 mark for setting up two equations]
   So $m + \frac{9}{14}m = 1150$
   $\implies \frac{23}{14}m = 1150$
   $\implies m = 1150 \div \frac{23}{14} = 700$ miles
   $\implies d = \frac{9}{14} \times 700 = 450$ miles
   *[1 mark for a correct method
   to solve the simultaneous
   equations, 1 mark for m = 700,
   1 mark for d = 450]*