11 n is an integer.

Prove algebraically that the sum of $(n+2)(n+1)$ and $n+2$ is always a square number.

12 There are 9 counters in a bag.

5 of the counters are red.
4 of the counters are blue.

Two counters are taken at random from the bag.

Work out the probability that two red counters are taken.

13 Solve $3x^2 - 20x + 12 < 0$

14 Solve the simultaneous equations:

$$x^2 + y^2 = 73$$
$$y = 3x - 1$$

15 By completing the square, find the turning point of the graph with equation $y = x^2 + 6x - 1$

16 Prove algebraically that the recurring decimal $0.\dot{7}\dot{8}$ can be written as $\frac{26}{33}$

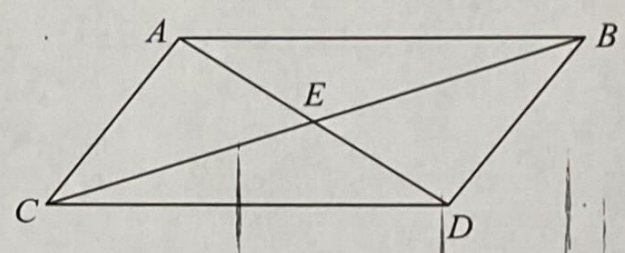
17 Cone A and Cone B are mathematically similar.

The volume of Cone A is 250 cm^3 and the volume of Cone B is 16 cm^3.

The total surface area of Cone B is 12 cm^2.

Calculate the total surface area of Cone A.

18 $ABCD$ is a parallelogram



Prove that triangle ACE is congruent to triangle BDE.

19 Here are the first 5 terms of a quadratic sequence.

1 6 17 34 57

Find an expression, in terms of n, for the nth term of this sequence.

20

Sketch the graph of $y = \sin x°$ for $0 \leq x \leq 360$