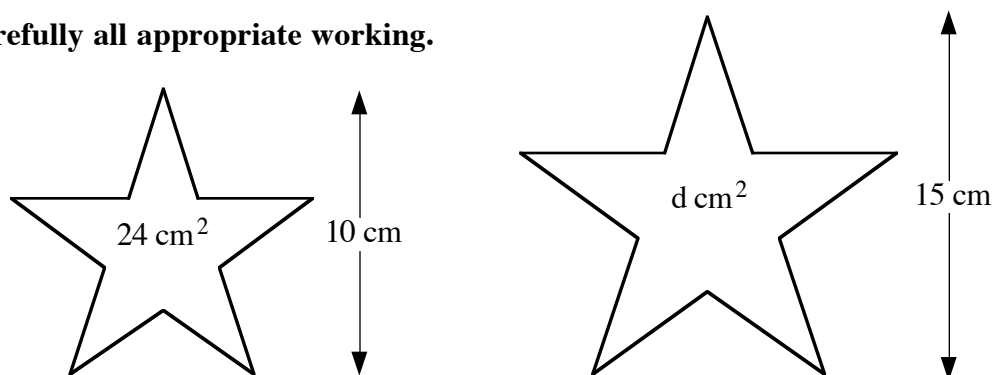# HOME EXERCISE 7

Set out carefully all appropriate working.

1.

The two star shapes shown are similar.
Calculate the value of d. (3)

2. A train travelled 425 kilometres at an average speed of 125 kilometres per hour.
It left on its journey at 10 50 am.

At what time did the train arrive at its destination? (4)

3. **One cubic centimetre** of helium contains $2 \cdot 688 \times 10^{19}$ atoms.

Calculate the number of atoms in 3 **litres** of helium. (3)
Give your answer in **scientific notation** and correct to **3 significant figures**.

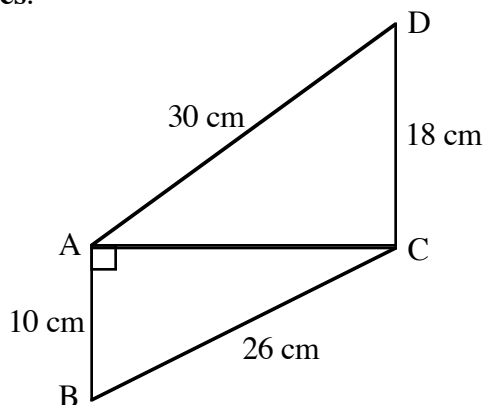4. A satellite orbits the earth at a height of 120 km.
Each year the height of its orbit decreases by 5%.

Calculate the height of the satellite's orbit after 3 years. (4)
Give your answer correct to **3 significant figures**.

5. In the diagram triangle ABC is right-angled.

(a) Calculate the length of side AC. (3)

(b) Show that triangle ACD is right-angled. (3)

Total 20 marks