

Problem Solving GCSE Questions

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(1) The cost per person to pay for their seat on a minibus is inversely proportion to the number of people who pay for a seat.

When 10 people pay, the cost is £32 per person.

Find the cost per person when 16 people pay.

(2) Fred is 1.23m tall

Jim is 135cm tall.

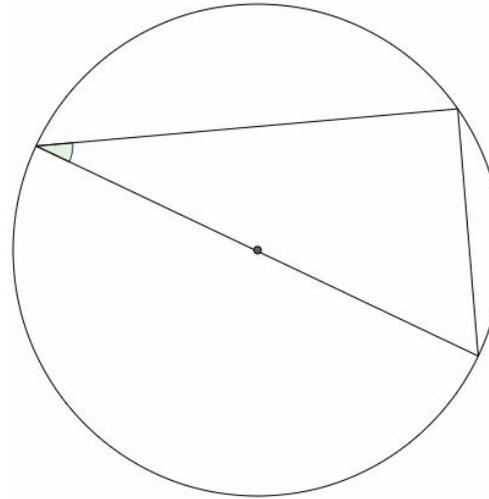
Fred is increasing in height at a rate of 3% a year.

Jim is shrinking at a rate of 2% a year.

Find the difference in the height of Fred and the height of Jim in 7 years time.

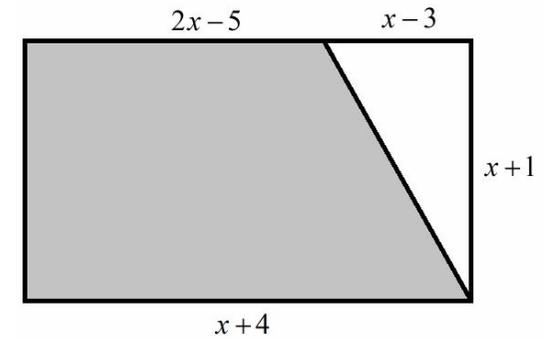
(3) The area of the circle below is $16\pi \text{ cm}^2$.

The smallest angle in the triangle is 30°



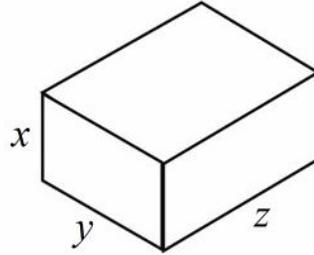
Find the area of the triangle. Give your answer to 3 significant figures.

(4) Find the perimeter of the shaded trapezium in the rectangle below.



(5) In a bag there are 3 different colour beads. There are red beads, green beads and blue beads. The ratio of red beads to green beads is 2:3. The ratio of blue beads to green beads is 7:15. Given that there are 42 blue beads, find how many more red beads there are than blue beads.

(6) A closed top cuboid is shown in the diagram below.



- (a) Find an expression for the volume of the cuboid in terms of x , y and z .
- (b) Find an expression for the surface area of the cuboid in terms of x , y and z .
- (c) Given that an expression for the density of the cuboid is y^2 , find a simplified expression for the mass of the cuboid.

(7) John is studying the weather for the next two days. The forecast is either sunny or cloudy. The weather on the second day is not influenced by the weather on the first day. The probability of both days being sunny is 0.36. Find the probability that only one of the days is sunny.

(8) Without using a calculator, put the following values in ascending order. You must show your workings.

$$\left(\frac{25}{64}\right)^{\frac{1}{2}} \quad 2^{-2} \quad 8^{\frac{1}{3}} \quad \frac{5}{16}$$