

# Module 5: 20 Quick questions

1. Can a triangle have two obtuse angles?
2. One of the angles of an isosceles triangle is 80 degrees, and the other two angles are not equal. What values must the other two angles have?
3. What is the area of a circle of diameter 10cm? Give your answer to one decimal place of square centimetres
4. One of the exterior angles of a parallelogram is 70 degrees in size. What are the values of the interior angles of the parallelogram?
5. A regular polygon has exterior angle 30 degrees. How many sides has the polygon?
6. A van driver charges £20 call out fee and £1.25 per mile for moving machinery.
  - a) How much does a trip of 12 miles cost?
  - b) How far can you go for £45?
  - c) Write an expression for the cost of a journey of N miles
7. A sequence of numbers looks like this... 12, 15, 18, 21
  - a) Write down the next three terms in the sequence
  - b) What is the rule for getting from one term to the next?
  - c) Write down a formula for the Nth term of the sequence
8. The next term of a sequence is five more than the current term. The 30<sup>th</sup> term has the value 147. Calculate the first term in the sequence (\*\*)
9. Nathan Adler is paid a basic salary of £600 per month plus £200 for each £250 000 of sales he can generate in the art gallery. One month, Nathan sells £4 500 000 worth of art. How much was he paid?
10. Write down a square number that is above 70 and less than 100
11. What is the reciprocal of 5?
12. Write down the negative square root of 64
13. What is the area of a triangle that is drawn on a base of 50cm and has a height of 30cm?
14. A polytent used to grow vegetables has a constant cross sectional area of 4.5 m<sup>2</sup> and is 30m long. What volume of air is in the polytent?
15. A cuboid shaped room has a floor that measures 8 metres by 6 metres, and has a volume of 120 m<sup>3</sup>. What is the height of the room?
16. The exterior angle of a regular polygon is half the value of the interior angle. How many sides does the polygon have?
17. A prism has cross section area of 100 cm<sup>2</sup> and a volume of 800 cm<sup>3</sup>. How long is the prism?
18. You walk 10 paces due North, and then turn 90 degrees clockwise and walk another 15 paces. How far are you from your starting point?
19. Name the quadrilateral that has one pair of equal angles that are opposite each other
20. A radio car charges £1.50 per call out plus 80p per mile. How much will a 6 mile ride cost?

## Answers

1. No, total internal angle of a triangle is 180 and two obtuse angles add to more than 180
2. The 80 degree angle must be one of the two equal angles, so the other angles must be 80 and  $180 - 160 = 20$  degrees
3. 78.6 square centimetres (I used 3.142 for pi)
4. Exterior = 70 so interior must be 110, and two same so that's 220. Angles in a quadrilateral add to 360, so that leaves 140 for the other two, or 70 degrees (could also use a parallel line fact to show the exterior angle is alternate to the acute interior angle)
5.  $360 / 60 = 6$  sides so a hexagon
6. a)  $12 \times 1.25 + 20 = \text{£}35$   
b)  $45 - 20 = 25 / 1.25 = 20$  miles  
c)  $C = 1.25N + 20$
7. a) 24, 27, 30  
b) Add 3  
c)  $3n + 9$
8.  $5x + 30 + x = 147$ , so  $150 + x = 147$  so  $x = -3$  and the formula is  $5n - 3$ . Putting  $n = 1$  into the formula gives 2 as the first term...
9.  $\text{£}600 + 4500000 / 250000 \times 200 = \text{£}600 + 18 \times \text{£}200 = \text{£}4200$ . A very good month!
10. 81
11. 0.2 or one fifth
12. -8
13. half base times height so  $50 \times 30 / 2 = 750$  sq cm
14.  $4.5 \times 30 = 135$  cubic metres
15.  $120 / 48 = 2.5$  metres
16.  $x + 2x = 180$  so  $x = 60$ .  $360 / 60 = 6$  sides (hexagon)
17.  $800 / 100 = 8$  cm
18. This is a right angled triangle with short sides 10 and 15, so  $225 - 100 = 125$ , then square root is 11.2 paces
19. Kite
20. The cost is  $1.5 + 6 \times 0.8 = \text{£}6.30$