

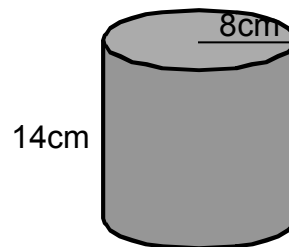
Intermediate 2 – Revision
Unit 1

1. Calculate the compound interest on
 - (a) £3500 at a rate of 6% per annum for a period of 5 years
 - (b) £780 at a rate of 4.3% per annum for a period of 4 years.
2. The population of Dunborough is 42 000. Over the next 3 years the population is expected to fall at a rate of 1.72% per annum. Calculate the expected population of Dunborough in 3 years time. Give your answer correct to 3 significant figures.
3. A snowball with volume 81 cm^3 is sitting at the top of a hill. It starts to roll down the hill and as it does so its volume increases at a rate of 12% every 5 seconds. Calculate the volume of the snowball after 30 seconds.

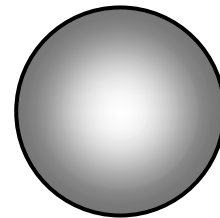
4. A survey of 3 countries in central Africa finds a total of 3264 lions. This number had fallen from 3400 the previous year. If the number of lions continues to fall at the same percentage rate, how many lions will there be in 8 years time?



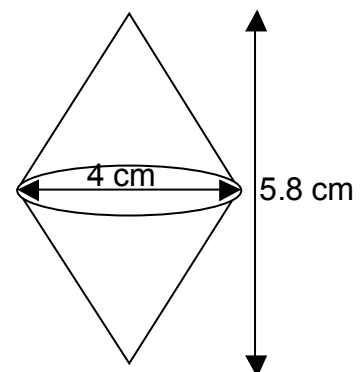
5. A cylinder has radius 8 cm and height 14 cm. Calculate its volume. Give your answer correct to 2 significant figures.



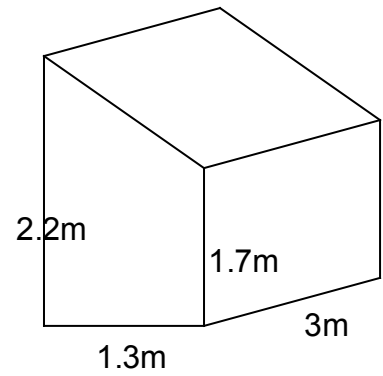
6. A sphere has diameter 21 centimetres. Calculate its volume.



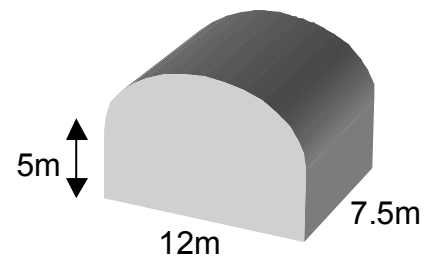
7. A fisherman's float is in the shape of two identical cones as shown opposite. Calculate the volume of this float.



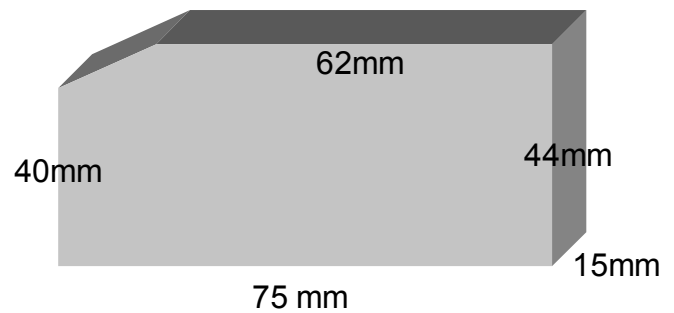
8. A garden shed has cross-sectional area in the shape of a rectangle and a triangle, as shown.
Calculate the volume of this shed.



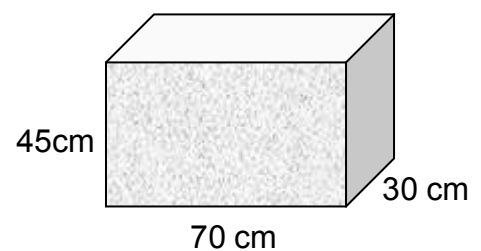
9. The front of a barn is in the shape of a rectangle with a semi-circle on top.
Calculate the volume of this barn.



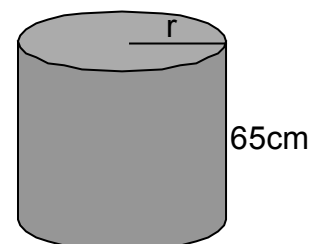
10. Calculate the volume of the prism opposite.



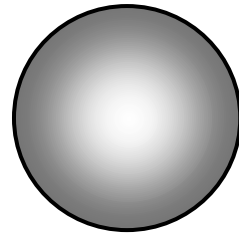
11. (a) A company packs its goods in boxes with measurements as shown opposite.
Calculate the volume of this box.



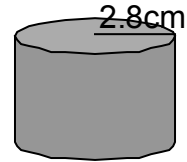
- (b) The company decide to change the way they pack their goods due to the boxes being too easily damaged.
The new package is in the shape of a cylinder as shown.
Given the cylinder has the same volume as the original box, find its radius, r .



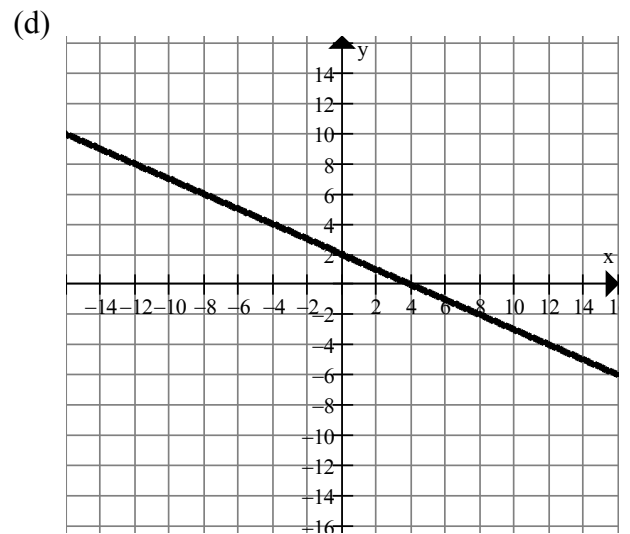
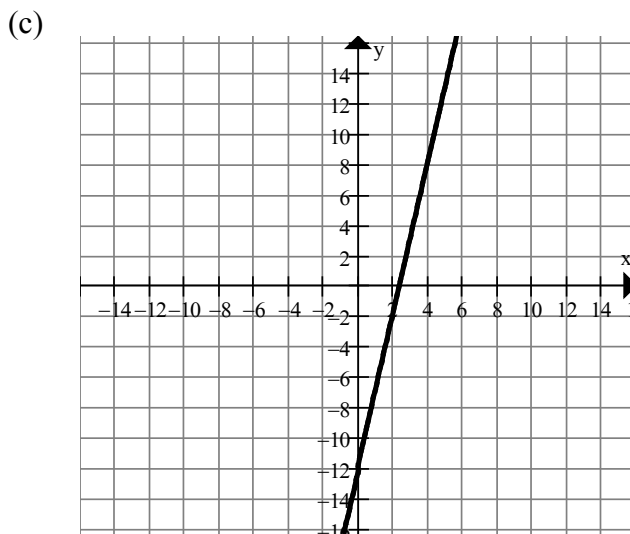
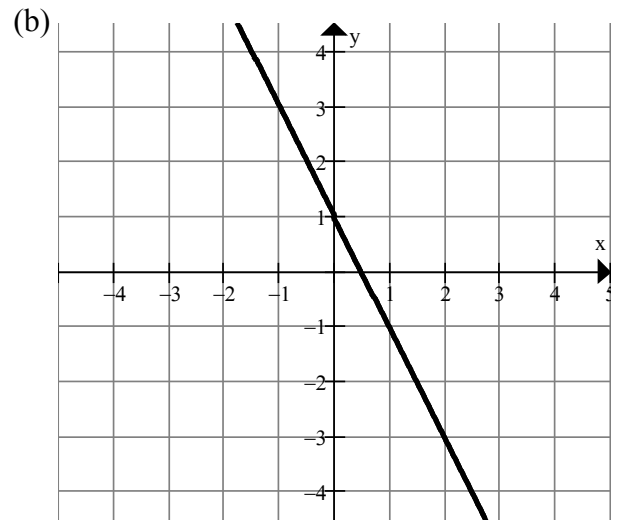
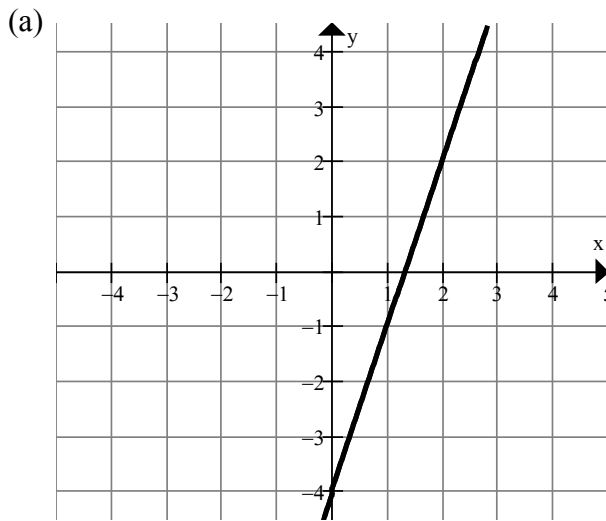
12. (a) A solid metal sphere of radius 6.5 cm is shown opposite. Calculate its volume.



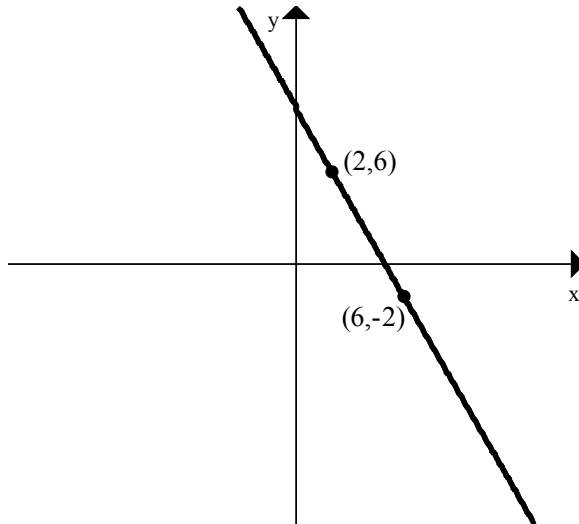
- (b) The sphere is melted down to make 8 identical cylinders each with radius 2.8 cm. Calculate the height of each cylinder.



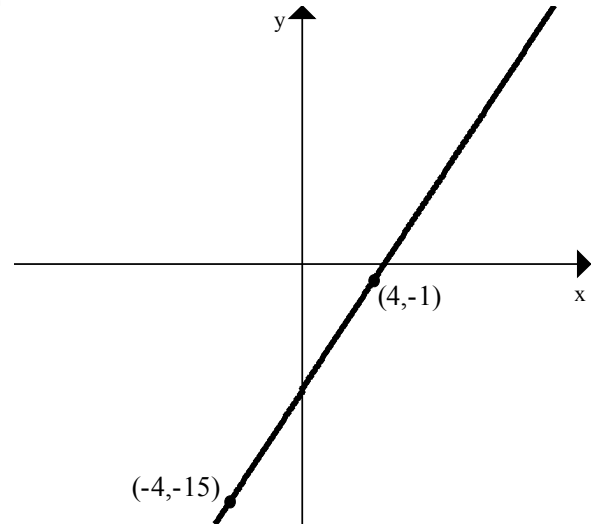
13. Find the equation of each line below.



(e)



(f)



14. Write down the gradient and y-intercept of each line below.

(a) $y = 4x - 2$ (b) $3y = 9x + 12$ (c) $2y = 5x - 3$ (d) $4x + 2y = 10$ (e) $2x + 3y - 4 = 0$

15. Expand the brackets and simplify

(a) $(x + 3)(x - 5)$ (b) $(2a - 4)(3a + 2)$ (c) $(4x - 3y)^2$ (d) $(2n - 1)(3n^2 - 4n - 3)$
(e) $(x^2 - 5x + 1)(2x - 3)$

16. Factorise fully

(a) $2p^2 - 8p$ (b) $10m + 5m^2$ (c) $a^2 - 36$ (d) $3n^2 - 12$ (e) $a^2 - 7a + 12$
(f) $p^2 + 2p - 8$ (g) $2x^2 + 5x - 7$ (h) $3y^2 + y - 14$ (i) $12 - 5x - 2x^2$

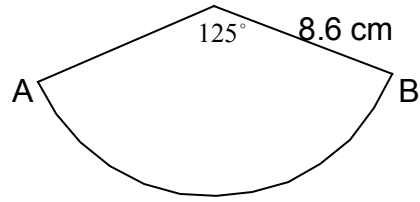
17. (a) Factorise $2x^2 - 10x$

(b) Hence simplify $\frac{2x^2 - 10x}{3x^2 - 16x + 5}$

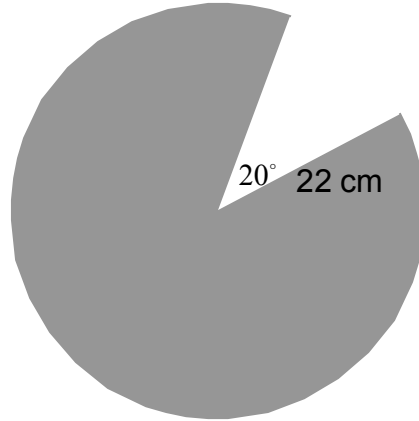
18. (a) Factorise $x^2 - 6x + 8$

(b) Hence simplify $\frac{x^2 - 6x + 8}{2x^2 - 3x - 2}$

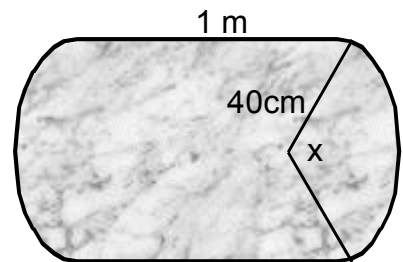
19. Calculate the length of arc AB in the diagram.



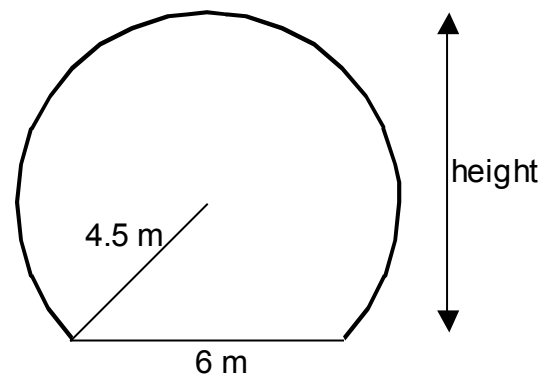
20. Calculate the shaded area opposite.



21. The diagram below shows a kitchen worktop.
If the perimeter of the worktop is 367.5 centimetres,
Calculate the size of angle x.

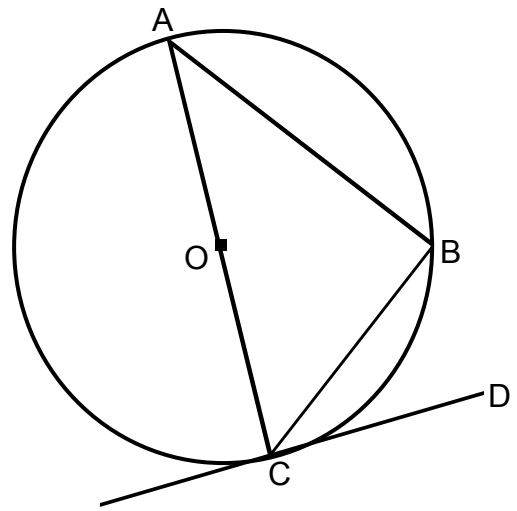


22. The diagram opposite shows the cross-section
of a tunnel.
Calculate the height of the tunnel.



23. A, B and C are points on the circumference of a circle, centre O.
 CD is a tangent to the circle.
 Angle BCD = 25°

Calculate the size of angle BAC.



24. PTR is a tangent to the circle, centre O.
 PO is parallel to TB.

Calculate the size of angle OPT.

