

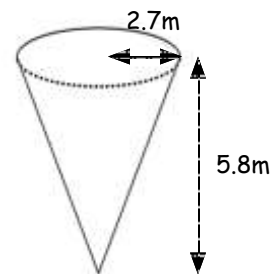
Intermediate 2 - Unit 1 - Practice NAB 3

Outcome 1

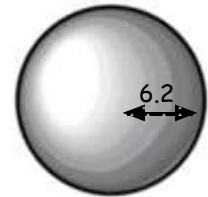
1. The Dunbartonshire Bank pays 2.4% compound interest per annum. How much interest would be received after 3 years on a deposit of £2000? (4)
2. A new house costs £150000. The value of the house appreciated by 20% after the first year and depreciated by 11% after the second year. Calculate the value of the house after 2 years. (4)

Outcome 2

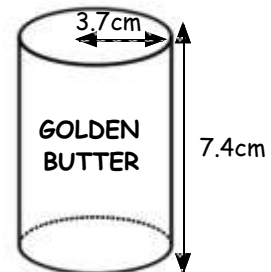
3. A container is in the shape of a cone as shown in the diagram. Calculate the volume of the container. (2)



4. Calculate the volume of a sphere with radius 6.2cm. Give your answer correct to 3 significant figures and state the units clearly. (4)



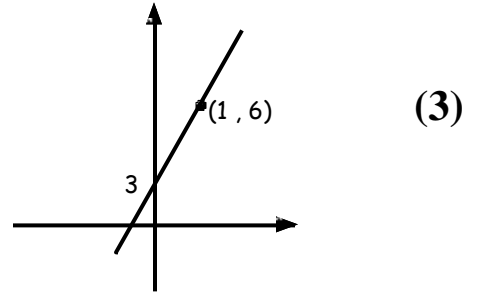
5. A dairy produces a pack of butter in the shape of a cylinder. The radius of the base is 3.7cm and the height is 7.4cm. Calculate the volume of the cylinder. Give your answer correct to 2 significant figures. (3)



Outcome 3

6. A is the point (2,4) and B is the point (1,6). Find the gradient of the line AB. (2)
7. A line has equation $y = 6x - 4$. Make a sketch of this line on blank paper showing the coordinates of the intercept on the y axis. (2)

8. Find the equation of the straight line in the diagram opposite in terms of x and y .

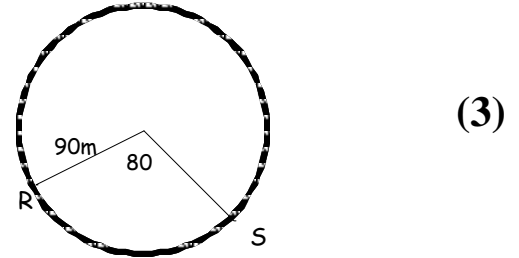


Outcome 4

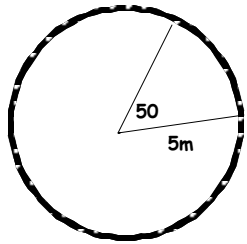
9. Simplify: **a)** $m(5m - n)$ **(b)** $(p - 3)(p - 1)$ (3)
10. Factorise: **a)** $t^2 + 4t$ **(b)** $a^2 - 5^2$ **(c)** $x^2 + 2x - 15$ (4)

Outcome 5

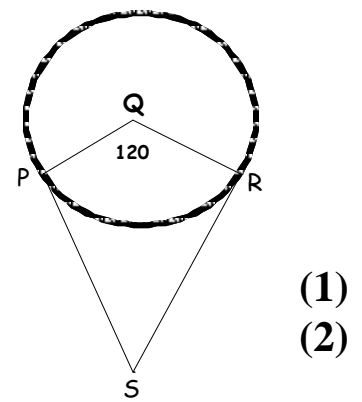
11. Calculate the length of the minor arc RS in this circle with radius of 90m.



12. Calculate the area of the major sector of the circle with radius 5m shown.

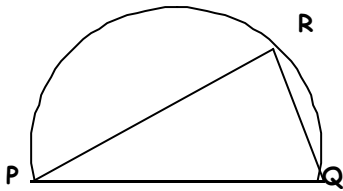


13. The diagram below shows a kite PQRS and a circle with centre Q. PS is the tangent to the circle at P and RS is the tangent to the circle at R. Given that angle PQR is 120.



- a)** state the size of angle QRS
b) find the size of angle PSR

14. The diagram shows a triangle PQR inscribed in a Semicircle with diameter PQ. Given that the angle RPQ is 45, find the size of the shaded angle. (1)



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Solutions

Outcome 1 - You need 5 out of 8 to pass.

1. Total = $1.024^3 \times 2000$ Interest = $2147.48 - 2000$
= £2147.48 = £147.48
2. Year 1 = 1.20×150000 Year 2 = 0.89×18000
= £180000 = £160200

Outcome 2 - You need 6 out of 9 to pass.

3. $V = \frac{1}{3}\pi r^2 h$ 4. $V = \frac{4}{3}\pi r^3$ 5. $V = \pi r^2 h$
= $\frac{1}{3} \times \pi \times 2.7^2 \times 5.8$ = $4 \times \pi \times 6.2^3 \div 3$ = $\pi \times 3.7^2 \times 7.4$
= $132.83.. \div 3$ = $2994.91.. \div 3$ = 318.26
= 44.28m^3 = 998.31 = 320cm^3
= 998 cm^3

Outcome 3 - You need 5 out of 7 to pass.

6. $m = \frac{y_2 - y_1}{x_2 - x_1}$ 7. Diagram drawn with straight line passing
= $\frac{6 - 4}{1 - 2}$ the point (0, -4) and rising steeply
= $\frac{2}{-1}$ from Left to Right.
= -2
8. $m = \frac{y_2 - y_1}{x_2 - x_1}$
= $\frac{3 - 6}{0 - 1}$
= $\frac{-3}{-1}$
= 3 Equation is $y = 3x + 3$

Outcome 4 - You need 5 out of 7 to pass.

9. a) $m(5m - n) = 5m^2 - mn$

(b) $(p - 3)(p - 1) = p^2 - 4p + 3$

10. a) $t^2 + 4t = t(t + 4)$

(b) $a^2 - 5^2 = (a - 5)(a + 5)$

c) $x^2 + 2x - 15 = (x - 3)(x + 5)$

Outcome 5 - You need 7 out of 10 to pass.

11. Arc = $\frac{x}{360} \times \pi D$
= $\frac{80}{360} \times \pi \times 180$
= $\frac{45238.93}{360}$
= 125.66m

12. Area = $\frac{x}{360} \times \pi r^2$
= $\frac{310}{360} \times \pi \times 5^2$
= $\frac{24347.343}{360}$
= 67.63m²

13. a) Angle QRS = 90

(b) PSR = $360 - (120 + 90 + 90)$
= 60

14. PSR = $180 - (90 + 45)$
= 45