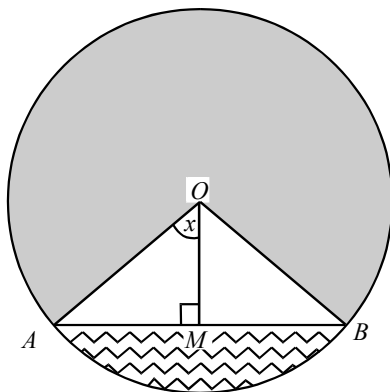


GCSE MATHEMATICS Higher Tier REVISION SHEET

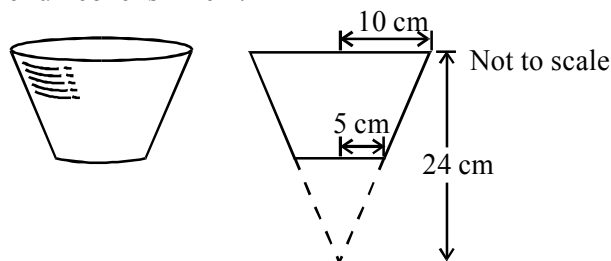
1. (a) Write the number 1.61 as a rational number in the form $\frac{a}{b}$, where a and b are whole numbers.
 - (b) Express the number 1.616161... as a rational number in the form $\frac{a}{b}$, where a and b are whole numbers.
2. (a) Expand and simplify $(2a + 3)(2a - 3)$.
 - (b) Factorise completely $9x + 3x^2$.

3.



AB is a chord of the circle, centre O , radius 10 cm. $AB = 16$ cm.

- (a) Calculate the size of angle x .
 - (b) Calculate the area shaded in the diagram.
 - (c) Calculate the area shaded in the diagram.
4. The sloping sides of a flower bowl are part of a cone as shown.
The radius of the top of the bowl is 10 cm and the radius of the bottom of the bowl is 5 cm.
The height of the full cone is 24 cm.



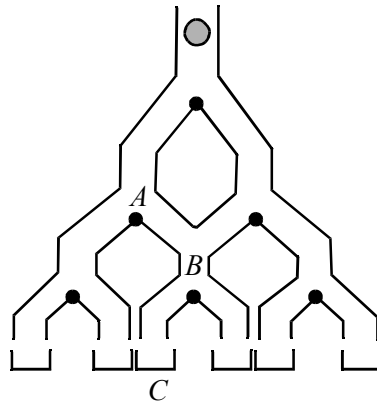
- (a) Calculate the volume of the full cone.
 - (b) By using similar figures, calculate the volume of the flower bowl.
- {Note, the volume of a cone of radius r and height h is given by $V = \frac{1}{3} \pi r^2 h$.}

5. (a) Simplify $\frac{1}{a+2} + \frac{1}{a-4}$.

(b) Simplify $\frac{x^2-9}{3x-9}$.

6. Solve the equation $12x^2 - 25x + 12 = 0$.

7. In a game, a steel ball is dropped onto a set of nails arranged in three levels as shown. When a ball hits a nail, the probability of it moving right or left before reaching the next level is $\frac{1}{2}$.

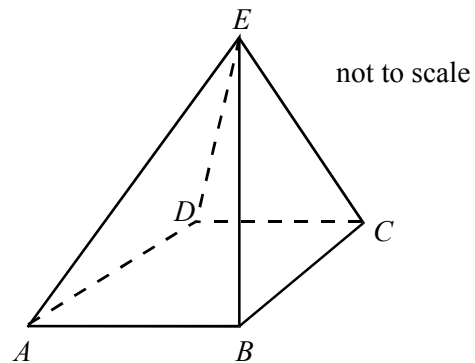


- Calculate the probability of a ball
- (a) reaching *A*,
 - (b) reaching *B*,
 - (c) dropping into slot *C*.

8. y is inversely proportional to the square of x , and $y = 9$ when $x = 2$.

- (a) Find y in terms of x .
- (b) Find the positive value of x when $y = 144$.

9. $ABCDE$ is a right pyramid. The base, $ABCD$, is a square of side 6 cm. The vertical height of the pyramid is 8 cm.



Calculate

- (a) The length of AE ,
- (b) the size of the angle between AE and the base.

Answers.

1. (a) $\frac{161}{100}$.
(b) $\frac{160}{99}$.
2. (a) $4a^2 - 9$.
(b) $3x(3 + x)$.
3. (a) 53.13010235° .
(b) 221.4297436 cm^2 .
(c) 44.7295218 cm^2 .
4. (a) 2513.274123 cm^3 .
(b) 2199.114858 cm^3 .
5. (a) $\frac{2a - 2}{(a + 2)(a - 4)}$.
(b) $\frac{x + 3}{3}$.
6. $x = \frac{3}{4}$ or $x = \frac{4}{3}$.
7. (a) $\frac{1}{2}$.
(b) $\frac{1}{2}$.
(c) $\frac{1}{4}$.
8. (a) $y = \frac{36}{x^2}$.
(b) $x = 2$.
9. (a) 9.055385138 cm .
(b) 62.06164727° .