

Code Breaker: Equation of a Circle

The Maths Habit

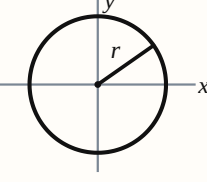
CRACK THE CODE

Every circle has its centre at the origin, so its equation is $x^2 + y^2 = r^2$. Give gradients as fractions. Look your answer up in the **Code Box** and write the letter it unlocks in the white box. Collect all thirteen letters in the strip, then unscramble them to find the answer.

13 CLUES

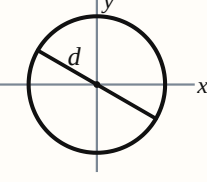


1



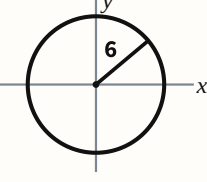
$x^2 + y^2 = 81$
Find the radius.

2



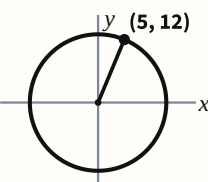
$x^2 + y^2 = 64$
Find the diameter.

3



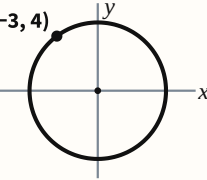
The radius is 6.
 $x^2 + y^2 = ?$

4



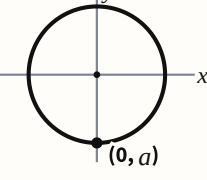
Find the radius.

5



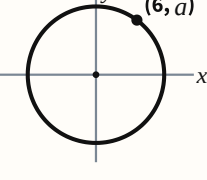
$x^2 + y^2 = ?$

6



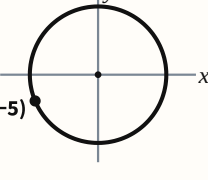
$x^2 + y^2 = 121$
Find a .

7



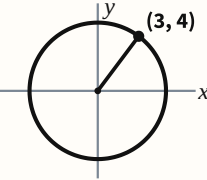
$(6, a)$ is on $x^2 + y^2 = 100$.
Find a .

8



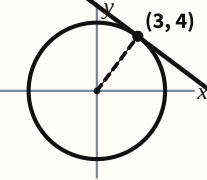
$(b, -5)$ is on $x^2 + y^2 = 169$.
Find b .

9



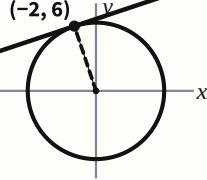
Find the gradient of the radius to $(3, 4)$.

10



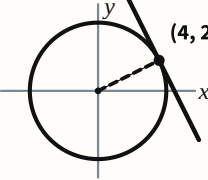
Find the gradient of the tangent at $(3, 4)$.

11



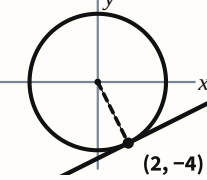
Find the gradient of the tangent at $(-2, 6)$.

12



The tangent at $(4, 2)$ crosses the y axis at $(0, c)$. Find c .

13



The tangent at $(2, -4)$ crosses the y axis at $(0, c)$. Find c .

YOUR LETTERS

UNSCRAMBLE Clue: the fifth of November (8, 5) _____

CODE BOX

$-12 = W$

$-11 = G$

$-6 = D$

$-5 = E$

$-3 = C$

$8 = R$

$9 = H$

$10 = I$

$11 = S$

$12 = P$

$13 = L$

$16 = K$

$25 = T$

$36 = N$

$81 = M$

$-\frac{4}{3} = B$

$\frac{1}{3} = O$

$\frac{4}{3} = R$

$-\frac{3}{4} = F$

$\frac{3}{4} = L$

