Name: _____ 5-a-day Higher Plus

24th March

CorbettmΩths

Factorise completely

$100x - x^3$

$x(100 - x^2)$

$x(10 - x)(10 + x)$

n is the set of even numbers from 1 to 400

O is the set of odd numbers 0
P is the set of prime numbers 1
C is the set of cube numbers 3
S is the set of square numbers 9 (+1)

How many numbers are there in the set O ∪ P ∪ C ∪ S

2 8 4 196
64 16 256
216 36 324
64 400
100
144

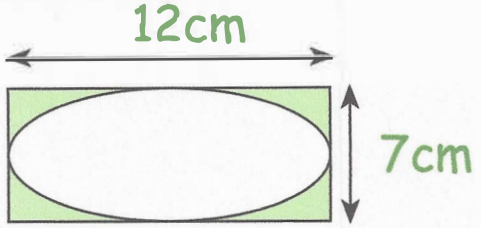
13

The area of an ellipse, width a and height b is given by $12 \times 7 = 84$

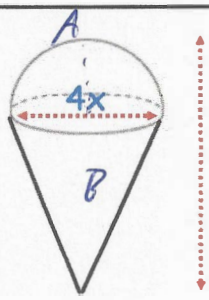
$$A = \frac{\pi ab}{4} \qquad \frac{\pi \times 7 \times 12}{4} = 21\pi$$

$84 - 21\pi$ cm²

Find the shaded area.



(18.02655 cm²)



$A \left(\frac{4}{3} \times \pi \times (2x)^3\right) \div 2$

$\left(\frac{4}{3} \times \pi \times 8x^3\right) \div 2$

$\frac{16}{3}\pi x^3$

A solid is made by putting a hemisphere on top of a cone.
Find an expression for the volume in terms of x.

$B : \frac{1}{3} \times \pi \times (2x)^2 \times 8x$

$: \frac{1}{3} \times \pi \times 4x^2 \times 8x$

$: \frac{1}{3} \times \pi \times 32x^3$

$: \frac{32}{3}\pi x^3$

Total

$16\pi x^3$

The coefficient of the x^2 in the expansion of $(x + a)(x + 3)(2x - 3)$ is 9.

$(x^2 + 3x + ax + 3a)(2x - 3)$

Find a $2x^3 - 3x^2 + 6x^2 - 9x + 2ax^2 - 3ax + 6ax - 9a$

$-3 + 6 + 2a = 9$

$3 + 2a = 9$

$2a = 6$

$a = 3$