

## Starter

1. Fully factorise

a.  $32p^2 - 16p$

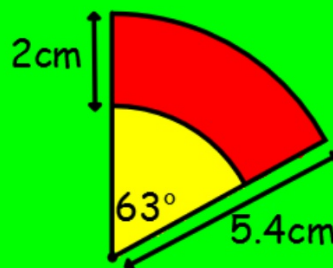
b.  $4r^2s - 32s^2t^3 + 64rs^3t$

2. Ray begins following the 1 year abs challenge.

The scheme requires participants to increase the number of situps they do each day by 1.5% (to the nearest situp.)

If Ray does 5 situps on the first day, how many situps will he be doing per day after one year?

3. Find the area of the red section.



## Starter

1. Solve

a.  $12 - 2(x - 5) = 10$

b.  $5(3x - 4) - 4(2 - x) = 1$

2. Find the gradient and y-intercept of the following straight lines:

a.  $6y = 8x - 4$

b.  $7x - 2y + 9 = 0$

3. Find the **perimeter** of a sector with an angle of  $45^\circ$  and a radius of 35cm.

4. A rectangle has a diagonal of 4.2 cm and its shorter sides are 2.3 cm long.

What is the length of its longer sides?

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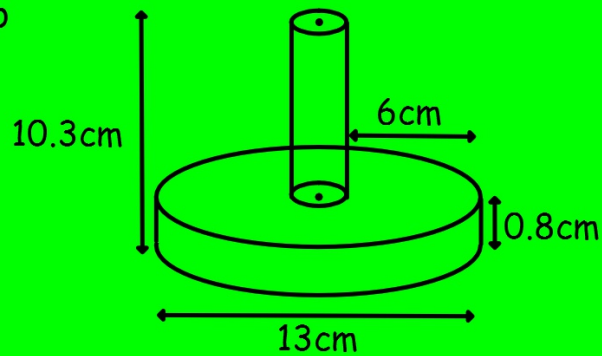
a.  $52c^2d - 14cd^2$

b.  $18ef + 36e^2fg + 114f^5g^3$

2. a. Find the equation of the line joining the points  $(-2, 5)$  and  $(0, 9)$ .

b. Does the point  $(1, 10)$  lie on the line?

3. Find the volume of the shape shown, which consists of two cylinders placed one on top of the other.



## Starter

1. Solve  $\frac{3x}{2} + 6 = \frac{2}{3}$
2. a. Does the point (2, -3) lie on the line  $y = -4x + 5$ ?  
b. Find the equation of the line parallel to the line above which passes through the point (0, -9).
3. A cylinder, with height of 13.1m, has volume of  $32,100\text{cm}^3$ . Calculate the radius of the cylinder.
4. A telegraph pole 7.2 m high is held vertical by a sloping wire 9.0 m long fixed to its top and anchored to the ground. Find the angle which the wire makes with the ground.

## Starter

- George leaves Aberdeen and drives at a steady speed of 60 m.p.h. to reach Glasgow. If the distance between the two cities is 150 miles, how long did it take him?
- Expand and simplify.
  - $(x - 1)(x + 4)$
  - $(3x + 1)(x - 2)$
- A man leaves point L and walks 3.4 km North to arrive at point M. He then leaves M and walks East to reach point N. If the bearing of N from L is  $080^\circ$ , find the distance MN.
- Find angle  $FGH$ .

