

20th September



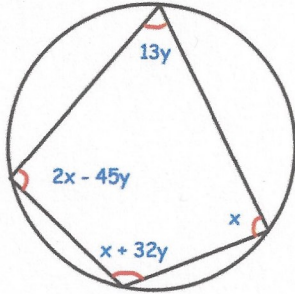
Corbettmaths

Prove  $(n + 6)^2 - (n + 2)^2$  is always a multiple of 8

$$n^2 + 12n + 36 - (n^2 + 4n + 4)$$

$$8n + 32$$

$$8(n + 4)$$



Find  $x$  and  $y$ .

$$x + 45y = 180$$

$$3x - 45y = 180 \quad \text{add}$$

$$4x = 360$$

$$x = 90$$

$$y = 2$$

The volume of gas  $V$  is inversely proportional to the pressure  $p$ .

By what percentage will the pressure of the gas change if its volume is increased by 30%

decrease of  $\frac{3}{13}$

decrease by 23.077%

$$V \propto \frac{1}{p}$$

$$V = \frac{k}{p} \quad 1.3V = \frac{k}{y}$$

$$k = Vp \quad k = 1.3Vy$$

$$Vp = 1.3Vy$$

$$p = 1.3y$$

$$y = \frac{10}{13}p$$

Solve the inequality  $x^2 - x - 30 \geq 0$

$$(x - 6)(x + 5)$$

$$x = 6 \quad x = -5$$



$$x \geq 6 \quad \text{or} \quad x \leq -5$$

Julie has an empty container. She puts some white, yellow and green counters into the box. The ratio of white to yellow to green counters is 2:2:1. Julie takes at random, 2 counters from the box, one at a time, without replacement. The probability that she takes two yellow counters is  $\frac{1}{7}$

How many counters did Julie put in the box?

15

$$W:Y:G \\ 2:2:1$$

$$P(YY) = \frac{6}{15} \times \frac{5}{14} = \frac{1}{7}$$