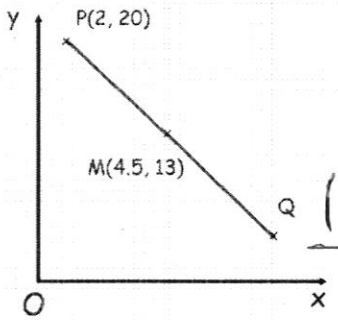
Name: _____ 5-a-day Further Maths

26th October

Corbettmaths

M is the midpoint of PQ

Find the coordinates of the point Q.



Q (7, 6)

Using the digits 3, 4, 5, 6, 7 and 8, how many numbers greater than 70000, without any repeated digits, can be made?

5 digits: $\underset{7,8}{2} \times 5 \times 4 \times 3 \times 2$ +

6 digits: $6 \times 5 \times 4 \times 3 \times 2 \times 1$

$= 240 + 720$

$= 960$

Simplify

$$\frac{x^2-16}{x^2+x-56} \div \frac{4x^2-17x+4}{3x-21}$$

$$= \frac{(x+4)(x-4)}{(x+8)(x-7)} \times \frac{3(x-7)}{(x-4)(4x-1)}$$

$$= \frac{3(x+4)}{(x+8)(4x-1)}$$

The nth term of sequence A is $\frac{n+2}{2n-3}$

The nth term of sequence B is $\frac{3n-14}{n+5}$

The qth term in sequence A is the same as the qth term in sequence B.

Work out the value of q

$$\frac{q+2}{2q-3} = \frac{3q-14}{q+5}$$

$$(q+2)(q+5) = (3q-14)(2q-3)$$

$$q^2 + 7q + 10 = 6q^2 - 37q + 42$$

$$0 = 5q^2 - 44q + 32$$

$$0 = (q-8)(5q-4)$$

$$\Rightarrow q = 8 \text{ or } \tfrac{4}{5}$$