1st October **Higher Plus 5-a-day**

Corbettmaths

Factorise $6x^2 + 13x + 6$

$(3x + 2)(2x + 3)$

$f(x) = 4x + 3$

$y = 4x + 3$

$y - 3 = 4x$

$x = \frac{y-3}{4}$

Find $f^{-1}(x)$

$f^{-1}(x) = \frac{x-3}{4}$

A bag contains 4 red sweets and 5 green sweets.
Kelly removes 3 sweets, one at a time, without replacement.

Find the probability that she does not choose 3 sweets that are the same colour.

$1 - P(\text{same})$

$P(GGG) = \frac{5}{9} \times \frac{4}{8} \times \frac{3}{7} = \frac{5}{42}$

$P(RRR) = \frac{4}{9} \times \frac{3}{8} \times \frac{2}{7} = \frac{1}{21}$

$1 - \left(\frac{5}{42} + \frac{1}{21}\right) = \frac{5}{6}$

Calculate an estimate of the interquartile range

$LQ^{(265^{th})}$ $10 + \frac{130}{244} \times 10 = 15.328$

$UQ^{(795^{th})}$ $20 + \frac{416}{555} \times 10 = 27.495$

$27.495 - 15.328 = 12.167$

Time taken	Frequency
$0 < t \leq 10$	135
$10 < t \leq 20$	244 ✓
$20 < t \leq 30$	555
$30 < t \leq 50$	106
$50 < t \leq 100$	20

1060

Find the shortest possible distance between the line y = 3x + 5 and the origin.

$m = -\frac{1}{3}$ $y = -\frac{1}{3}x$

$3x + 5 = -\frac{1}{3}x$ $(\times 3)$

$9x + 15 = -x$

$10x = -15$

$x = -1.5$

$y = 0.5$

$\sqrt{1.5^2 + 0.5^2} = 1.58$ to 2 decimal places