1. (a) Factorise $a^2 - b^2$

Difference of two squares (D.O.T.S)

$(a+b)(a-b) = a^2 + ab - ab - b^2$

$= a^2 - b^2$

$(a+b)(a-b)$

(1)

(b) Hence, or otherwise, simplify fully $(x^2 + 4)^2 - (x^2 - 2)^2$

← use information from part a

$a^2 - b^2$

$a = x^2 + 4$

$b = x^2 - 2$ (1)

$a^2 - b^2 = (a+b)(a-b)$ ← seen in part a

$= ((x^2+4)+(x^2-2))((x^2+4)-(x^2-2))$ (1)

$= (2x^2 + 2) \times 6$

$= 12x^2 + 12$

$= 12(x^2+1)$ (1)

$12(x^2+1)$

(3)

(Total for Question is 4 marks)

- Median
- measure of spread

The median on Monday is greater than on tuesday ✓

The range on Monday is greater than on tuesday ✓

No, because the upper 25% of trains may be delayed between 17 and 25 mins or 30 and 33 mins ✓

2. (a) Simplify $\dfrac{x-1}{5(x-1)^2}$

$\frac{x-1}{5(x-1)^2} \div \frac{(x-1)}{(x-1)} = \frac{1}{5(x-1)}$

$\frac{1}{5(x-1)}$ ✓

(1)

(b) Factorise fully $50 - 2y^2$

$2(25 - y^2)$ ✓

$2(5-y)(5+y)$

$2(5-y)(5+y)$ ✓

(2)