

8E

1. a. Eng :  $z = \frac{48 - 40}{4.4} = 1.82$

Mand :  $z = \frac{81 - 60}{9} = 2.33$

Geog :  $z = \frac{84 - 55}{18} = 1.61$

Bio :  $z = \frac{68 - 50}{20} = 0.9$

Maths :  $z = \frac{84 - 50}{15} = 2.27$

b. Mand, Maths, Eng, Geog, Bio

4. a.  $P(\mu - \sigma < x < \mu + 2\sigma) = P(a < z < b)$

$$a = -1, \quad b = 2$$

b.  $P(\mu - 0.5\sigma < x < \mu) = P(a < z < b)$

$$a = -0.5, \quad b = 0$$

c.  $P(0 \leq z \leq 3) = P(\mu - a\sigma \leq x \leq \mu + b\sigma)$

$$a = 0, \quad b = 3$$

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6. a. i.  $\mu = z$ ,  $\sigma = 1$ ,  $m = 0$

$$\therefore \mu - 3\sigma = -3$$

$$\text{and } \mu + 2\sigma = 2$$

ii.  $P(\mu - 3\sigma < X < \mu + 2\sigma)$

$$= P(-3 < Z < 2) = 0.976$$

7. a. i.  $z_1 = \frac{50.6 - 58.3}{8.96}$

$$= -0.859$$

$$(-0.859371)$$

$$z_2 = \frac{68.9 - 58.3}{8.96}$$

$$= 1.18$$

$$(1.182036)$$

ii.  $P(-0.859 \leq Z \leq 1.18)$

$$= 0.687$$

b.  $P(50.6 \leq X \leq 68.9) = 0.687 \quad \checkmark$