

## ERRATA

### SMARTPREP and Haese Mathematics Mathematics SL Flash Cards

First edition - 2017 initial print

The following errata were made on 10/May/2019

card 131 **TOPIC 5** should read:



A random variable  $X$  is normally distributed with mean 2.5 and **standard deviation  $\sigma$** .

- Explain why an observation  $X = 4$  cannot have a  $z$ -score less than or equal to 0.
- An observation  $X = 4$  has a  $z$ -score of 1.06. Determine the value of  $\sigma$ .
- Find  $P(X \geq 3.1)$ .
- Find  $P(3.1 \leq X \leq 5)$ .
- Find  $P(|X - 2| \leq 1)$ .
- Find  $k$  such that  $P(X \geq k) = 0.9$ .

- The observation  $X = 4$  is above the mean 2.5  
 $\therefore$  its  $z$ -score is positive.
  - $z = \frac{x - \mu}{\sigma}$   
 $\therefore \sigma = \frac{x - \mu}{z}$   
 $\therefore \sigma = \frac{4 - 2.5}{1.06}$   
 $\approx 1.42$
  - $P(X \geq 3.1) \approx 0.336$
  - $P(3.1 \leq X \leq 5) \approx 0.297$
  - $P(|X - 2| \leq 1)$   
 $= P(-1 \leq X - 2 \leq 1)$   
 $= P(1 \leq X \leq 3)$   
 $\approx 0.494$
  - $P(X \geq k) = 0.9$   
 $X$  has mean 2.5 and standard deviation  $\approx 1.42$   
 $\therefore k \approx 0.686$
- Note:** When using TI calculator models, we must always calculate the area to the left of  $k$ . So, quantiles of the form  $P(X \geq k) = 0.9$  must first be written as  $P(X \leq k) = 1 - 0.9 = 0.1$ .

The following errata were made on 03/Apr/2018

card 57 TOPIC 3 should read:



Find the angles that the lines  $y = \frac{3}{4}x + 1$  and  $y = -x - 1$  make with the positive  $x$ -axis.

Hence find the acute angle between the lines.

card 72 TOPIC 3 ANSWER to question c should mark the dashed line on question b's graph correctly:

- a** The principal axis is half way between the maximum and minimum temperatures.

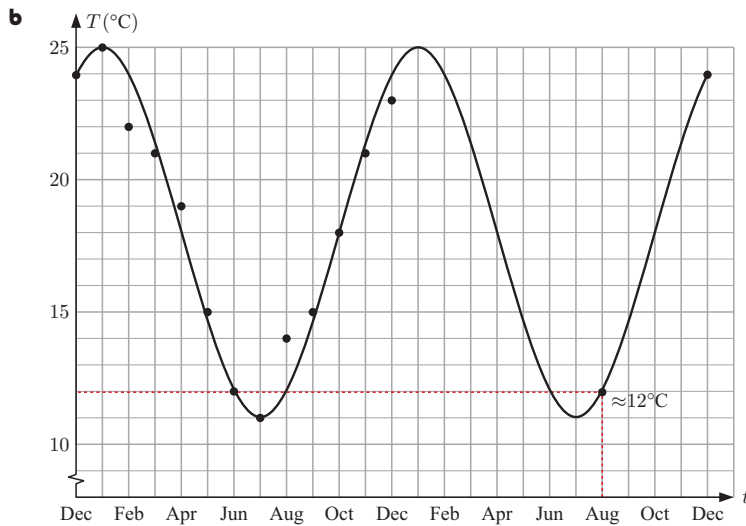
$$\therefore d = \frac{25 + 11}{2} = 18$$

$$\text{The amplitude} = \frac{\text{max} - \text{min}}{2} = \frac{25 - 11}{2} = 7 \quad \therefore a = 7.$$

$$\text{The period is 12 months} \quad \therefore \frac{2\pi}{b} = 12 \quad \therefore b = \frac{\pi}{6}$$

At  $t = 10$ , the graph rises across the principal axis  $\therefore c = 10$ .

So, the data can be modelled by  $T \approx 7 \sin\left(\frac{\pi}{6}(t - 10)\right) + 18$  degrees Celsius.



- c** We predict the mean temperature for the following August to be about 12°C.