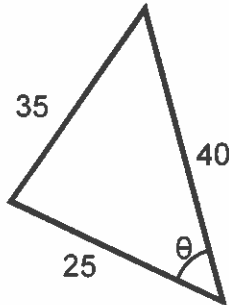


---

# Answer Key - Sampler A

1. B
2. A
3. A
4. B
5. D
6. C
7. A
8. B
9. D
10. D
11. C
12. D
13. A
14. C

- 15) Find the acute value of  $\theta$ . Round the answer to the nearest degree.



$$\cos \theta = \frac{35^2 - 40^2 - 25^2}{-2(40)(25)}$$

$$\cos \theta = \frac{1225 - 1600 - 625}{-2000}$$

$$\cos \theta = \frac{-1000}{-2000}$$

$$\cos \theta = 0.5$$

$$\theta = \cos^{-1}(0.5)$$

$$\theta = 60^\circ$$

Answer: 60 °

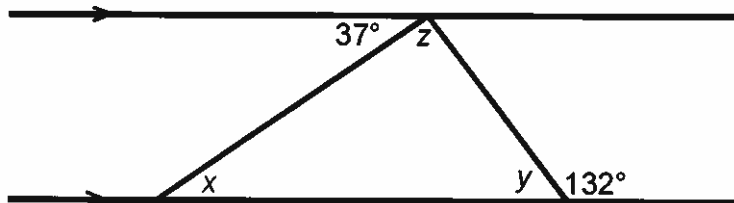
15.

For Department Use Only



Value of 1

- 16) Find the measure of each indicated angle. Justify your answer.



Angle Measure

Justification

$x = \underline{37^\circ}$

alternate interior angles are equal

$y = \underline{48^\circ}$

supplementary angles

$z = \underline{95^\circ}$

sum of the angles in a triangle is  $180^\circ$

16.

For Department Use Only

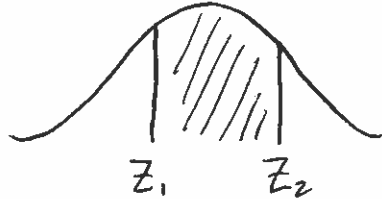
x	y	z

Value of 3

- 17) A manufacturer produces tires that have an average thickness of 179 mm, with a standard deviation of 0.9 mm. To be classified as "supreme quality", tires must have a thickness between 177.8 mm and 180.7 mm. What percent, to the nearest whole number, of the total production can be rated as "supreme quality" tires?

$$\mu = 179$$

$$\sigma = 0.9$$



$$z_1 = \frac{177.8 - 179}{0.9} = \frac{-1.2}{0.9} = -1.33$$

$$z_2 = \frac{180.7 - 179}{0.9} = \frac{1.7}{0.9} = 1.89$$

area to left of  $z_1 = 0.0918$

area to left of  $z_2 = 0.9706$

area between  $z_1$  &  $z_2 = 0.9706 - 0.0918 = 0.8788$

Answer:

$\therefore 88\%$  of the total production can be rated as "supreme quality"

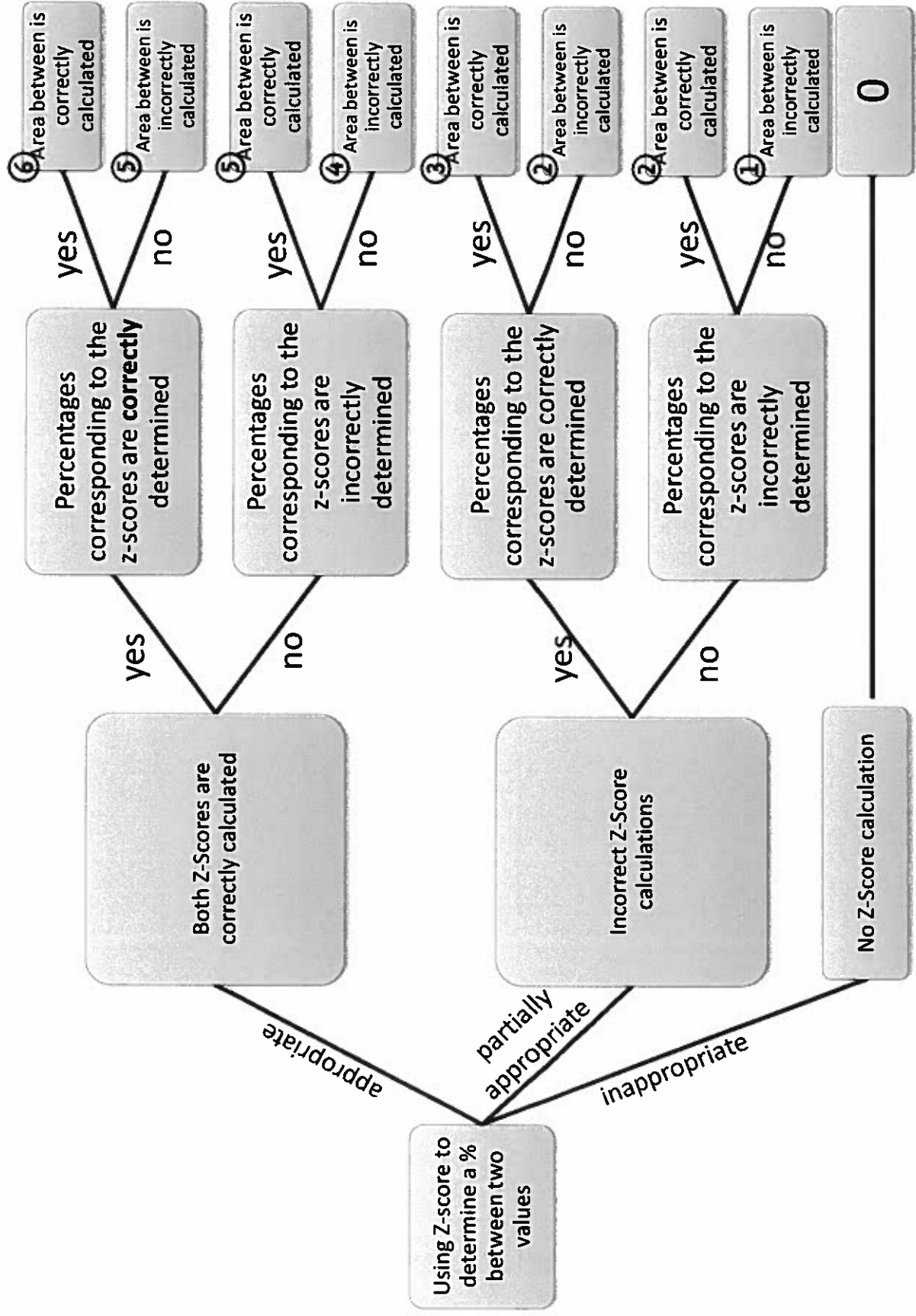
17.

For Department Use Only



Value of 3

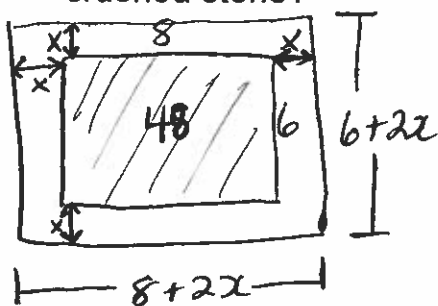
# Marking Rubric



If a solution is correct but not completed, it is considered to be only partially appropriate.

- 18) Use a quadratic function to model and solve the given problem:

A landscaper is designing a 6 m by 8 m rectangular garden that will then be surrounded by a uniform border of crushed stone. She has enough crushed stone to cover 72 m<sup>2</sup>. What is the width of the border if she uses all of the crushed stone?



$$\text{Total area} = 48 + 72 = 120 \text{ m}^2$$

$$(8 + 2x)(6 + 2x) = 120$$

$$48 + 16x + 12x + 4x^2 = 120$$

$$4x^2 + 28x + 48 - 120 = 0$$

$$4x^2 + 28x - 72 = 0$$

$$4(x^2 + 7x - 18) = 0$$

$$4(x + 9)(x - 2) = 0$$

$$x = \cancel{-9} \text{ or } x = 2$$

Can't have negative length.

Answer:

$\therefore$  If all the crushed stone is used, the border will be 2 m wide.

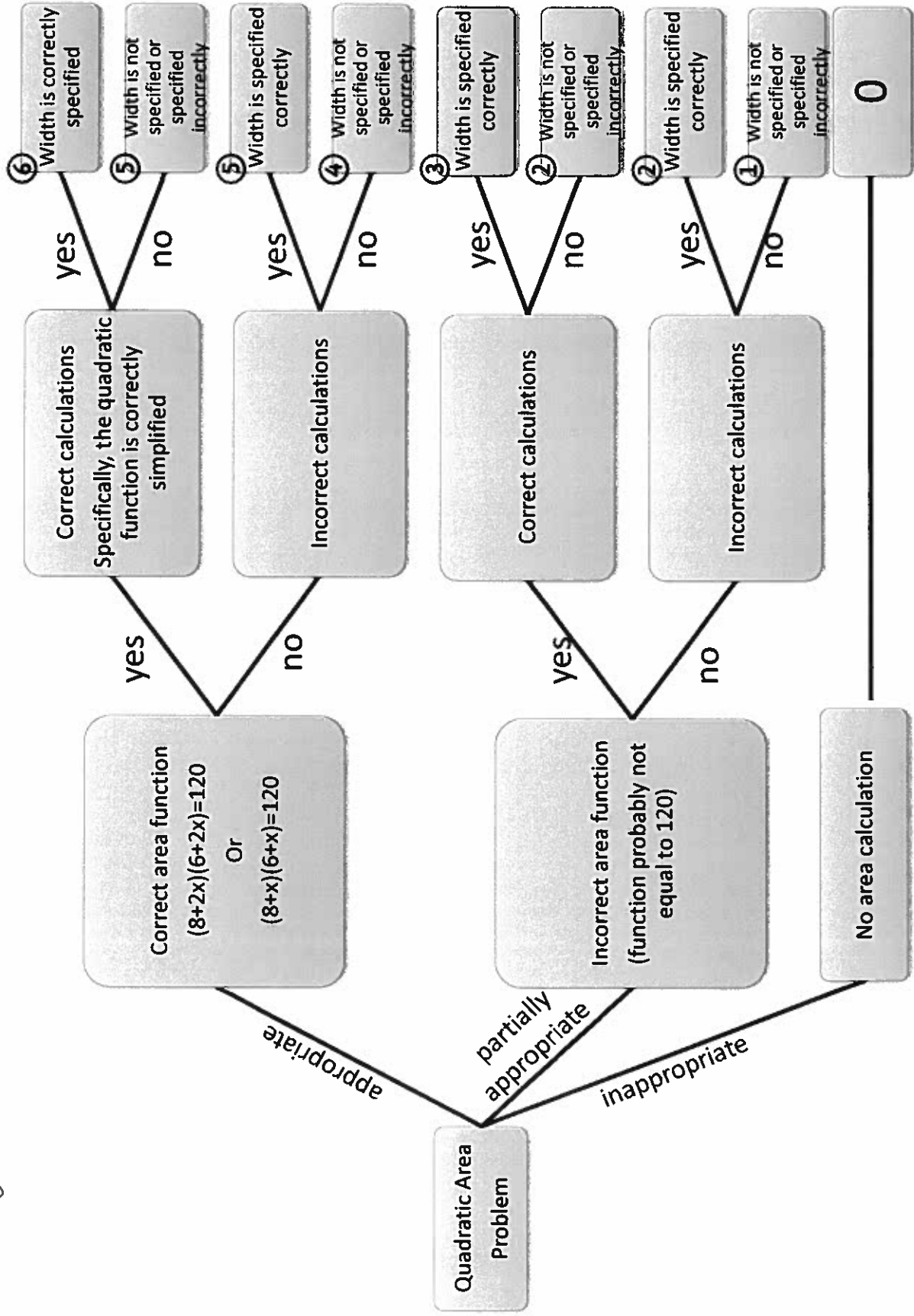
18.

For Department Use Only



Value of 3

# Marking Rubric



If a solution is correct but not completed, it is considered to be only partially appropriate.