

## Directions to the Student

Today you will be taking Session II of the Missouri Algebra I Test. This is a test of how well you understand the course level expectations for Algebra I.

### There are several important things to remember:

- 1 Read the performance event carefully and think about how to answer the question.
- 2 Show all of the work that you did to answer the question with a number 2 pencil. If a box is provided, make sure all of your work is in the box. If a line is provided to write your answer on, be sure your answer is on the line.
- 3 If you do not know the answer to a question, skip it and go on. You may return to it later if you have time.
- 4 If you finish the test early, you may check over your work.
- 5 Write or mark your answers directly in your test book with a number 2 pencil.

## Algebra I - Session II

Tony moved to a new house and wants to install a pool and landscape the yard. He will hire a company to manage the landscaping. Tony is considering hiring Company A or Company B.

Company A's and Company B's landscaping costs are shown in the tables below.

**Company A**

<b>Yard Size (ft<sup>2</sup>)</b>	<b>Cost (\$)</b>
300	7.50
980	24.50
1,200	30.00
2,000	50.00

**Company B**

<b>Yard Size (ft<sup>2</sup>)</b>	<b>Cost (\$)</b>
400	16.00
900	23.50
1,100	26.50
1,500	32.50

1. Tony is reseeding the front lawn. The lawn covers 2,500 square feet and grass seed is \$15.98 for each 7-pound bag. Each pound of grass seed covers 150 square feet. How much will it cost to reseed the lawn? Show all work. Enter the cost and work in the box.

$$\frac{2500}{150} = 16\frac{2}{3} \text{ lbs}$$
$$16\frac{2}{3} \div 7 \approx 2.38$$

need 3 bags

$$15.98(3) = 47.94$$

$\$47.94$

2. The following question has three parts. First, answer Part A. Second, answer Part B. Then, answer Part C.

Compare the landscaping costs between Company A and Company B. Let  $c$  represent landscaping cost, in dollars, and  $s$  the yard size, in square feet.

**Part A**

Write an equation to model what it would cost if Company A was hired. Enter the correct equation in the box.

$$\begin{array}{l}
 C = ms + b \\
 \begin{array}{r}
 4600 \\
 200 \overline{) 7.5} \\
 \underline{400} \\
 50 \\
 100 \\
 \underline{90} \\
 10
 \end{array}
 \end{array}$$

$m = \frac{17}{680}$

$$7.5 = \frac{17}{680}(300) + b$$

$$7.5 = 7.5 + b$$

$$\begin{array}{r} -7.5 \\ -7.5 \\ \hline 0 = b \end{array}$$

$C = \frac{17}{680}s$  or

$C = 0.025s$

**Part B**

Write an equation to model what it would cost if Company B was hired. Enter the correct equation in the box.

$$\begin{array}{l}
 C = ms + b \\
 \begin{array}{r}
 4600 \\
 400 \overline{) 16} \\
 \underline{400} \\
 60 \\
 120 \\
 \underline{90} \\
 30
 \end{array}
 \end{array}$$

$m = \frac{7.5}{500}$   
 $m = 0.015$

$$16 = 0.015(400) + b$$

$$16 = 6 + b$$

$$\begin{array}{r} -6 \\ -6 \\ \hline 10 = b \end{array}$$

$C = 0.015s + 10$

**Part C**

Which company would cost Tony the least amount to landscape 2,500 square feet? Explain your answer. Enter the correct answer and explanation in the box.

$$A: C = 0.025(2500) = 62.5$$

$$B: C = 0.015(2500) + 10 = 47.5$$

B would cost the least at \$47.50 for 2500 ft<sup>2</sup>

3. At how many square feet will both companies cost the same amount? Enter the answer in the box.

square feet

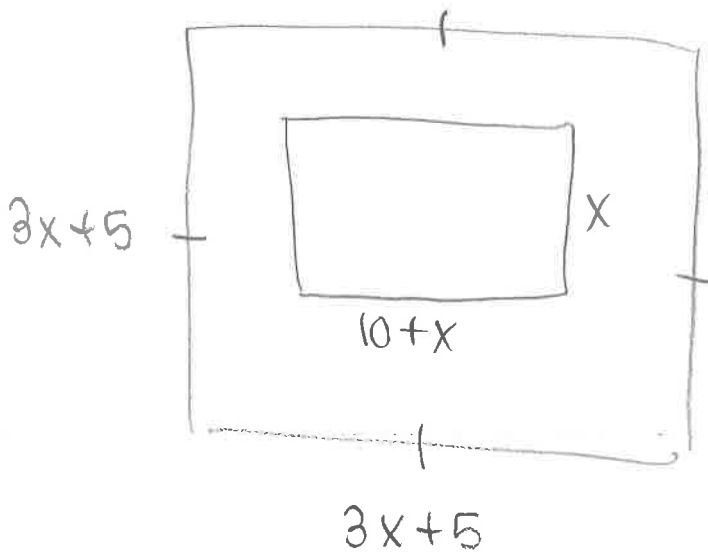
$$\begin{array}{r} 0.025s = 0.015s + 10 \\ -0.015s \quad -0.015s \\ \hline \end{array}$$

$$\begin{array}{r} 0.01s = 10 \\ \hline 0.01 \quad 0.01 \end{array}$$

$$s = 1000$$

4. Tony is installing a rectangular pool in the backyard. The pool needs to have a length of 10 feet more than the width. The backyard is a square shape with each of the sides measuring 5 feet more than 3 times the width of the pool. Write an expression for the area surrounding the pool after the pool is installed. Show your work. Enter the correct expression and work in the box.

$$8x^2 + 20x + 25 \text{ units}^2$$



$$l = 10 + x$$

$$w = x$$

$$s = 3x + 5$$

$$\begin{aligned} A_{\text{square}} &= (3x + 5)(3x + 5) \\ &= 9x^2 + 30x + 25 \end{aligned}$$

$$\begin{aligned} A_{\text{pool}} &= x(10 + x) \\ &= 10x + x^2 \\ &= x^2 + 10x \end{aligned}$$

$$\begin{aligned} &(9x^2 + 30x + 25) - (x^2 + 10x) \\ &9x^2 + 30x + 25 - x^2 - 10x \\ &\boxed{8x^2 + 20x + 25} \end{aligned}$$

STOP ●