

NAME: \_\_\_\_\_

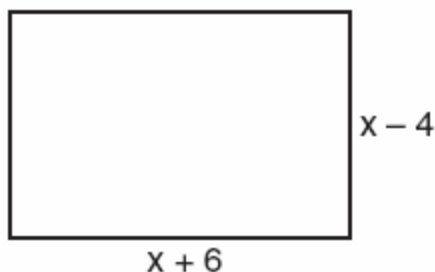
1. 010212a  
 What is the area of a square whose perimeter is represented by  $12x$ ?

[A]  $6x\sqrt{2}$  [B]  $12x^2$   
 [C]  $9x^2$  [D]  $144x^2$

2. 060527a  
 The length of a side of a square window in Jessica's bedroom is represented by  $2x - 1$ . Which expression represents the area of the window?

[A]  $4x^2 - 4x + 1$  [B]  $4x^2 + 4x - 1$   
 [C]  $2x^2 + 1$  [D]  $4x^2 + 1$

3. 060437a  
 Express both the perimeter and the area of the rectangle shown in the accompanying diagram as polynomials in simplest form.



4. 010202b  
 Chad had a garden that was in the shape of a rectangle. Its length was twice its width. He decided to make a new garden that was 2 feet longer and 2 feet wider than his first garden. If  $x$  represents the original width of the garden, which expression represents the difference between the area of his new garden and the area of the original garden?

[A]  $x^2 + 3x + 2$  [B] 8  
 [C]  $2x^2$  [D]  $6x + 4$

5. 080206a  
 If the area of a square garden is 48 square feet, what is the length, in feet, of one side of the garden?

[A]  $16\sqrt{3}$  [B]  $4\sqrt{6}$   
 [C]  $12\sqrt{2}$  [D]  $4\sqrt{3}$

6. 080031a  
 Mr. Santana wants to carpet exactly half of his rectangular living room. He knows that the perimeter of the room is 96 feet and that the length of the room is 6 feet longer than the width. How many square feet of carpeting does Mr. Santana need?

7. 080023a  
 Kerry is planning a rectangular garden that has dimensions of 4 feet by 6 feet. Kerry wants one-half of the garden to have roses, and she says that the rose plot will have dimensions of 2 feet by 3 feet. Is she correct? Explain.

8. 060818a  
 The dimensions of a rectangle are 4 and 16. What is the smallest integral value that could be the side of a square that has an area larger than that of the rectangle?

[A] 64 [B] 8 [C] 9 [D] 81

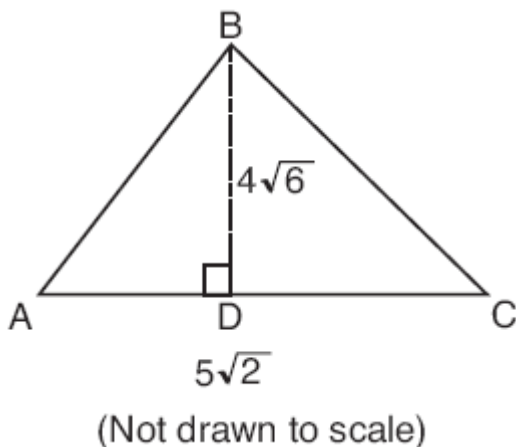
9. 060713a  
 If the base of a triangle is represented by  $x + 4$  and the height is represented by  $2x$ , which expression represents the area of the triangle?

[A]  $(x + 4) + (2x)$  [B]  $\frac{1}{2}(x + 4)(2x)$   
 [C]  $\frac{1}{2}((x + 4) + (2x))$  [D]  $(x + 4)(2x)$

NAME: \_\_\_\_\_

10. 010833a

In the accompanying diagram of  $\triangle ABC$ , altitude  $BD = 4\sqrt{6}$  and  $AC = 5\sqrt{2}$ . Find the area of the triangle to the *nearest tenth of a square unit*.



11. 010335a

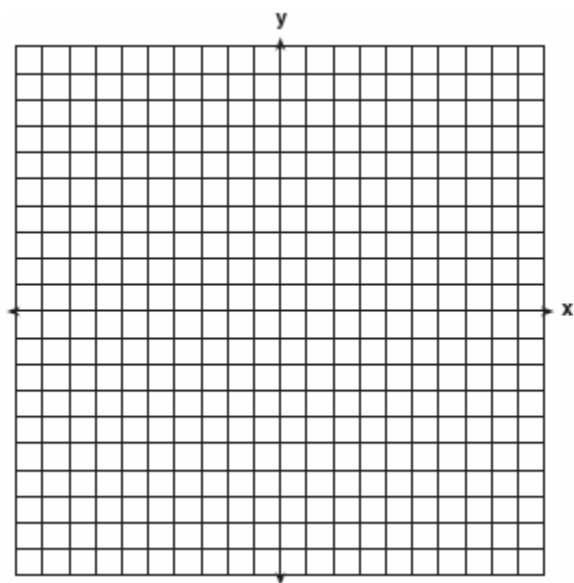
On the accompanying set of axes, graph and label the following lines:

$$y = 5$$

$$x = -4$$

$$y = \frac{5}{4}x + 5$$

Calculate the area, in square units, of the triangle formed by the three points of intersection.



12. 010608a

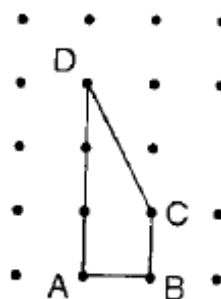
The equation  $A = \frac{1}{2}(12)(3+7)$  is used to find the area of a trapezoid. Which calculation would *not* result in the correct area?

[A]  $\frac{12}{2} \times \frac{10}{2}$  [B]  $0.5(12)(10)$

[C]  $\frac{12(3+7)}{2}$  [D]  $6(3+7)$

13. spring9822a

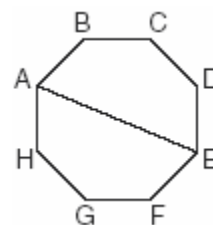
In the figure shown below, each dot is one unit from an adjacent horizontal or vertical dot.



Find the number of square units in the area of quadrilateral  $ABCD$ .

14. 010330b

A picnic table in the shape of a regular octagon is shown in the accompanying diagram. If the length of  $\overline{AE}$  is 6 feet, find the length of one side of the table to the *nearest tenth of a foot*, and find the area of the table's surface to the *nearest tenth of a square foot*.



[1] C \_\_\_\_\_

[2] A \_\_\_\_\_

[3] Perimeter =  $4x + 4$  or  $4(x + 1)$  and area =  $x^2 + 2x - 24$ , and appropriate work is shown.

[2]  $4x + 4$  and  $x^2 + 2x - 24$ , and appropriate work is shown, but the answers are not labeled or are labeled incorrectly.

or [2] Appropriate work is shown, but one computational error is made.

or [2] Area =  $x^2 + 2x - 24$ , and appropriate work is shown, but the perimeter is not found or is found incorrectly.

or [2] The area and perimeter are represented correctly, but only one of them is expressed in simplest form.

[1] Appropriate work is shown, but two or more computational errors are made.

or [1] Perimeter =  $4x + 4$ , and appropriate work is shown, but the area is not found or is found incorrectly.

or [1] The area and perimeter are represented correctly, but neither is expressed in simplest form.

or [1] Perimeter =  $4x + 4$  or  $4(x + 1)$  and area =  $x^2 + 2x - 24$ , but no work is shown.

[0] Perimeter =  $4x + 4$  or area =  $x^2 + 2x - 24$ , but no work is shown.

or [0]  $4x + 4$  and  $x^2 + 2x - 24$ , but no work is shown and the answers are not labeled or are labeled incorrectly.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[3] obviously incorrect procedure. \_\_\_\_\_

[4] D \_\_\_\_\_

[5] D \_\_\_\_\_

[4] 283.5 or 284 and appropriate work or an explanation is shown, such as  $4x + 12 = 96$ ,  $\frac{21 \times 27}{2}$ , or trial and error.

[3] Appropriate work is shown, but one computational error is made.

[2] Appropriate work is shown, but more than one computational error is made.

or [2] 283.5 or 284 and only a check is shown.

[1] Appropriate work is shown, but no answer is found.

or [1] 283.5 or 284 but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure. \_\_\_\_\_

- [2] Kerry is incorrect and an explanation is given that the original area is  $24 \text{ ft}^2$  and the area of the rose plot is  $6 \text{ ft}^2$ , which is not half of  $24 \text{ ft}^2$ .
- or [2] Kerry is incorrect and an explanation is given that since the original area is  $24 \text{ ft}^2$ , the area of the rose plot should be  $12 \text{ ft}^2$ , so the new dimensions should multiply to 12, such as  $3 \times 4$ ,  $4 \times 3$ ,  $2 \times 6$ ,  $2 \times 6$ .
- or [2] Kerry is incorrect and a diagram is used to show the original area is  $24 \text{ ft}^2$  and the area of the rose plot is  $6 \text{ ft}^2$ .
- [1] Kerry is incorrect but the work or diagram shows one error.
- or [1] Appropriate work is shown, but the incorrect conclusion is found.
- [0] Kerry is incorrect or correct but no explanation is given.
- or [0] Kerry is correct and  $\frac{1}{2}(4) = 2$  or  $\frac{1}{2}(6) = 3$  is shown.
- or [0] Kerry is correct and the student uses the perimeter.
- or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [7] \_\_\_\_\_
- [8] C
- [9] B
- [2] 34.6, and appropriate work is shown.
- [1] Appropriate work is shown, but one computational or rounding error is made.
- or [1] Appropriate work is shown, but one conceptual error is made, such as using an incorrect area formula.
- or [1] Appropriate work is shown, but the answer is left in radical form.
- or [1] 34.6, but no work is shown.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [10] \_\_\_\_\_
- [4] All lines are graphed and labeled correctly and area = 10, and appropriate work is shown.
- [3] The lines are graphed and labeled correctly, but the area of the triangle is missing or is incorrect.
- or [3] One of the lines is graphed incorrectly, but the area for the given triangle is found appropriately.
- [2] One of the lines is graphed incorrectly, and the area of the triangle is missing or is incorrect.
- [1] Only one line is graphed and labeled correctly, and no further correct work is shown.
- or [1] All three lines are graphed incorrectly, but the area for the given triangle is found appropriately.
- or [1] Area = 10, but no work is shown.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [11] \_\_\_\_\_
- [12] A
- [2] Appropriate method such as using the trapezoid formula and substituting in the correct values of  $h=1$ ,  $b=3$ ,  $b=1$  arriving at answer of 2.
- or [2] Breaking the figure into two figures such as a square with an area of 1, a triangle with an area of 1 and showing the sum of 2 as the answer.
- or [2] Showing the top triangular piece folded over to form a 2 X 1 rectangle.
- [1] Giving correct answer of 2 with no explanation.
- or [1] Showing the trapezoid formula but substituting or calculating incorrectly or using an incorrect trapezoid formula and substituting correctly.
- or [1] Breaking the figure into the two parts but calculating the area incorrectly such as arriving at an answer of 3 because of calculating the triangular area as 2 not 1.
- [13] \_\_\_\_\_

[4] The side equals 2.3 and the area equals 25.5, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made.

[2] Appropriate work is shown, but one incorrect formula is used, such as using an incorrect trigonometric function, but appropriate answers are found.

or [2] Appropriate work is shown to find the correct side, but no further correct work is shown.

[1] The radius equals 3 and the central angle equals  $45^\circ$ , but no further correct work is shown.

or [1] The side equals 2.3 and the area equals 25.5, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[14] incorrect procedure.

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