## COMMON CORE WORKSHEETS

## AREA \& PERIMETER



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## Solving Area Problems

1 A rectangular dining room is 9 feet wide and 12 feet long. What is the area of the dining room?
(A) 42 sq. ft
(B) $84 \mathrm{sq} . \mathrm{ft}$
(C) $96 \mathrm{sq} . \mathrm{ft}$
(D) 108 sq. ft

2 The rectangle below has an area of 36 square centimeters.


What is the length of the rectangle?
(A) 8 cm
(B) 9 cm
(C) 12 cm
(D) 14 cm

3 Complete the equation that can be used to find the area of the shaded part of the design, in square units. Then write the area on the line.



4 What is the area of the rectangle shown below?


Answer $\qquad$ $\mathrm{cm}^{2}$

5 Courtney wants to make a garden with an area of 240 square feet. Select all the possible dimensions of the garden.
$\square 24$ feet by 10 feet
$\square 6$ feet by 20 feet

6 The table shows how the area of a rectangle with a fixed width changes as the height changes.

| Height (inches) | Area (square inches) |
| :---: | :---: |
| 2 | 6 |
| 4 | 12 |
| 6 | 18 |
| 9 | 27 |

What is the width of the rectangle? $\qquad$ inches

Write four equations that show that the width is the same for all the rectangles.

7 Calvin has rectangular paddocks on his farm with areas of 640 square meters. The lengths and widths of the paddocks are whole numbers. Complete the missing number in each equation to find the possible pairs of dimensions.

$$
\begin{array}{ll}
20 \times \ldots=640 & 80 \times \ldots \\
64 \times \ldots & =640 \\
640 & 16 \times \ldots
\end{array}
$$

Find two other possible pairs of dimensions for the paddocks. Show or explain how you found your answer.

Answer $\qquad$ by $\qquad$ meters or $\qquad$ by $\qquad$ meters

8 The grids below have squares with units of 1 square centimeter $\left(\mathrm{cm}^{2}\right)$. Draw a rectangle on each grid to match the information given, and complete the missing information.


Length $=5 \mathrm{~cm}$
Height $=9 \mathrm{~cm}$
Area $=$ $\qquad$ $\mathrm{cm}^{2}$


Length $=7 \mathrm{~cm}$
Height = $\qquad$
Area $=56 \mathrm{~cm}^{2}$


Length $=$ $\qquad$ cm
Height $=6 \mathrm{~cm}$
Area $=18 \mathrm{~cm}^{2}$

9 Mr. Connor is planning to put solar panels on his roof. Each panel has the dimensions shown below.


7 feet
He wants the solar panels to have a total area of at least 150 square feet. How many solar panels should he place? What will be the total area of the solar panels?

Show your work.

Answer $\qquad$ solar panels, total area of $\qquad$ square feet

10 Leah is making rectangular picture frames. She wants each picture frame to be as below.

- The length and width will be in whole inches.
- The length will be greater than the width.
- The length will be less than 20 inches.
- The area will be 48 square inches.

On the grid below, draw three possible rectangles that represent the shape of the picture frames. Then write the length, width, and area of each picture frame below.

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1. length $\qquad$ in.
width $\qquad$ in. area $\qquad$ in. ${ }^{2}$
2. length $\qquad$ in.
width $\qquad$ in. area $\qquad$ in. ${ }^{2}$
3. length $\qquad$ in. width $\qquad$ in. area $\qquad$ in. ${ }^{2}$

## Solving Perimeter Problems

1 A rectangular cutting board is 16 inches long and 11 inches wide. What is the perimeter of the cutting board?
(A) 27 inches
(B) 54 inches
(C) 108 inches
(D) 176 inches

2 Which expression can be used to find the perimeter of a rectangle with a length of 6 meters and a width of 18 meters, in meters?
(A) $6+18$
(B) $6 \times 18$
(C) $2 \times(6+18)$
(D) $18+18+18+6+6+6$

3 Which of these could be the perimeter of a square with whole-number side lengths?
(A) 25 inches
(B) 29 inches
(C) 34 inches
(D) 48 inches

4 Which rectangles have a perimeter the same as the rectangle shown below? Select all the correct answers.

$\square 16 \mathrm{~cm}$ by 2 cm
10 cm by 3 cm16 cm by 1 cm

3 cm by 9 cm
14 cm by 6 cm

5 The rectangle below has a perimeter of 36 centimeters.


What is the width of the rectangle?

Answer cm

6 The table below shows the length, width, and perimeter of different rectangular fields. Complete the table with the missing information.

| Length <br> (meters) | Width <br> (meters) | Perimeter <br> (meters) |
| :---: | :---: | :---: |
| 20 | 12 |  |
| 15 | 18 | 84 |
|  | 6 | 62 |
| 14 | 53 | 38 |
| 50 | 25 | 200 |
|  |  | 124 |

7 The shaded area on the grid shows a rectangle with a perimeter of 16 units. Draw a rectangle on the second and third grids with different dimensions but the same perimeter.


Complete the equations to show that the perimeters are the same.
Grid 1 $2 \times 1$ $\qquad$ $+\ldots$ ) $=$ $\qquad$ or $\qquad$ $+\ldots+$ $\qquad$ $=$

Grid 2

$$
2 \times 1
$$ $+\ldots$ ) $=$ $\qquad$ or $+$ $+\ldots+$ $\qquad$

Grid 3
$2 \times 1$ $+$ $+\ldots)=$ or $\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$

8 The diagram below shows the dimensions of a school's stage.
28 m


What is the perimeter of the stage? Show your work or explain how you found your answer.

Answer $\qquad$ meters

9 Juliet is making a rectangular poster that is 20 inches long and 45 inches high. She wants to place ribbon around all the edges of the poster with no ribbon overlapping. The ribbon comes in rolls of 25 inches each. How many rolls will she need to buy? How much ribbon will be left over? Show your work or explain how you found your answer.

Answer $\qquad$ rolls of ribbon, $\qquad$ inches of ribbon left over

10 Janice is planning to make a rectangular sandpit. She wants the sandpit to be as below.

- The length and width will be in whole feet.
- The length will be greater than the width.
- It will use 18 feet of logs as the border.

On the grid below, draw four rectangles that represent possible dimensions of the sandpit.

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Janice wants to use the set of dimensions that gives the sandpit the greatest area. Which set of dimensions should she choose? Show your work or explain your answer.

Answer $\qquad$ by $\qquad$ feet

## Answers

## Solving Area Problems

1. D 2. B 3. $(6 \times 6)-(4 \times 2)=28 ; 28$ square units $4.22 \mathrm{~cm}^{2} 5.1^{\text {st }}, 4^{\text {th }}, 5^{\text {th }} 6.3$ inches; $2 \times 3=$ $6,4 \times 3=12,6 \times 3=18,9 \times 3=277.32,10,8,40 ; 1$ by 640 meters, 2 by 320 meters, 4 by 160 meters, or 5 by 128 meters (The student may use equations like $128 \times 5=640$ or describe finding factor pairs of 640 .) 8.5 by 9 rectangle, $45 \mathrm{~cm}^{2} ; 7$ by 8 rectangle, 8 cm ; 3 by 6 rectangle, $3 \mathrm{~cm} 9.8,168(150 \div 21=7 \mathrm{r} 3$, so needs 8 to have over 150 square feet. Total area $=8 \times 21=168$.) 10.16 by 3,12 by 4 , and 8 by 6 rectangles drawn; length 16 in., width 3 in ., area 48 in. $^{2}$; length 12 in., width 4 in., area 48 in. $^{2}$; length 8 in., width 6 in., area 48 in. ${ }^{2}$

## Solving Perimeter Problems

1. B 2. C 3. D 4. $3^{\text {rd }}, 5^{\text {th }} 5.3 \mathrm{~cm} 6.64,24,16,13,134,75,127$. grids have a 7 by 1 and a 5 by 3 rectangle; $2 \times(6+2)=16$ or $6+6+2+2=16 ; 2 \times(7+1)=16$ or $7+7+1+1=16 ; 2 \times(5+3)$ $=16$ or $5+5+3+3=168$. 74 meters (The work may show adding the missing dimensions to the diagram or may show the calculation $28+6+6+6+6+3+3+16=74$.) 9.6 rolls of ribbon, 20 inches of ribbon left over (Perimeter $=20+20+45+45=130$ inches. She needs 6 rolls of ribbon for at least 130 inches. $6 \times 25=150,150-130=20$.) 10.8 by 1,7 by 2,6 by 3 , and 5 by 4 rectangles drawn; 5 feet by 4 feet (The work may show using the diagram to compare areas, or may calculate the areas to compare them.)
