LESSON MAKER PRO

Measure It, Model It

Write equations for area and volume with rational dimensions.

GRADE 6 · TEKS 6.8.C

6.8.C "write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers; and"

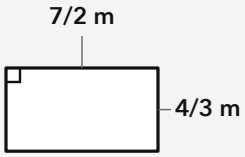
NAME _____ DATE _____

AREA AND VOLUME EQUATIONS

Let x represent the area or volume you need to find. For a rectangle or parallelogram, $x = bh$. For a triangle, $x = (1/2)bh$, for a trapezoid, $x = (1/2)(b_1 + b_2)h$, and for a right rectangular prism, $x = lwh$.

WORKED EXAMPLE

Find the area x of the rectangle shown. Write an equation and solve it.

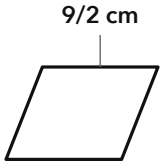


1. Use $x = bh$.
2. $x = (7/2)(4/3)$
3. $x = 28/6 = 14/3$

Answer: $x = 14/3$ m^2

PRACTICE 6 problems

1 The parallelogram shown has a perpendicular height of 2/3 cm. Write and solve an equation for its area x.



ANSWER _____

_____

2 A triangle has a base of 5/6 in. and a perpendicular height of 3/4 in. Write and solve an equation for its area x.

ANSWER _____

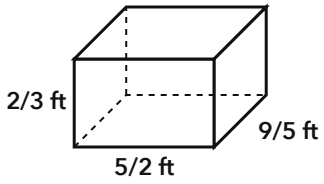
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3 A trapezoid has bases of 7/3 yd and 5/3 yd. Its height is 3/2 yd. Write and solve an equation for its area x.

ANSWER _____

_____

4 Find the volume x of the right rectangular prism shown. Write an equation and solve it.



ANSWER _____

_____

5 A rectangle is 1 3/4 m long and 2 2/7 m wide. Write and solve an equation for its area x.

ANSWER _____

_____

6 A right triangle has perpendicular legs of 11/6 cm and 12/11 cm. Write and solve an equation for its area x.

ANSWER _____

_____

APPLY IT Show your work

1 You are covering the top of a gaming desk with a protective mat. The rectangular top is 3 1/5 ft long and 1 1/2 ft wide. Write an equation for the area x of the mat, then find x.

WORK SPACE

ANSWER _____

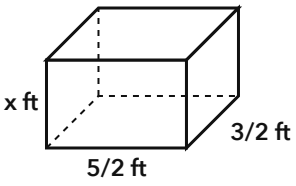
2 The art club is painting a trapezoid-shaped panel for a school event. Its bases are 2 1/4 m and 3 3/4 m, and its height is 1 1/5 m. Write an equation for the area x, then find x.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The right rectangular prism shown has a volume of 15/4 ft^3. Its height is x ft. Write and solve an equation to find x.



WORK SPACE AND ANSWER

ANSWER KEY

Measure It, Model It

GRADE 6 · TEKS 6.8.C

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The parallelogram shown has a perpendicular height of 2/3 cm. Write and solve an equation for its area x.	**x = (9/2)(2/3) = 3 cm^2**
2	A triangle has a base of 5/6 in. and a perpendicular height of 3/4 in. Write and solve an equation for its area x.	**x = (1/2)(5/6)(3/4) = 5/16 in.^{2}**
3	A trapezoid has bases of 7/3 yd and 5/3 yd. Its height is 3/2 yd. Write and solve an equation for its area x.	**x = (1/2)(7/3 + 5/3)(3/2) = 3 yd^2**
4	Find the volume x of the right rectangular prism shown. Write an equation and solve it.	**x = (5/2)(9/5)(2/3) = 3 ft^3**
5	A rectangle is 1 3/4 m long and 2 2/7 m wide. Write and solve an equation for its area x.	**x = (7/4)(16/7) = 4 m^2**
6	A right triangle has perpendicular legs of 11/6 cm and 12/11 cm. Write and solve an equation for its area x.	**x = (1/2)(11/6)(12/11) = 1 cm^2**

PART 2 · APPLY IT

1. **x = (16/5)(3/2) = 24/5 ft^2** Change 3 1/5 to 16/5 and 1 1/2 to 3/2. Multiply the length and width.
2. **x = (1/2)(9/4 + 15/4)(6/5) = 18/5 m^2** Change the mixed numbers to improper fractions. Add the bases, then multiply by one-half and the height.

CHALLENGE

(5/2)(3/2)x = 15/4, so x = 1 ft

Accept equivalent equations and equivalent fractions or mixed numbers. Require square units for area and cubic units for volume.