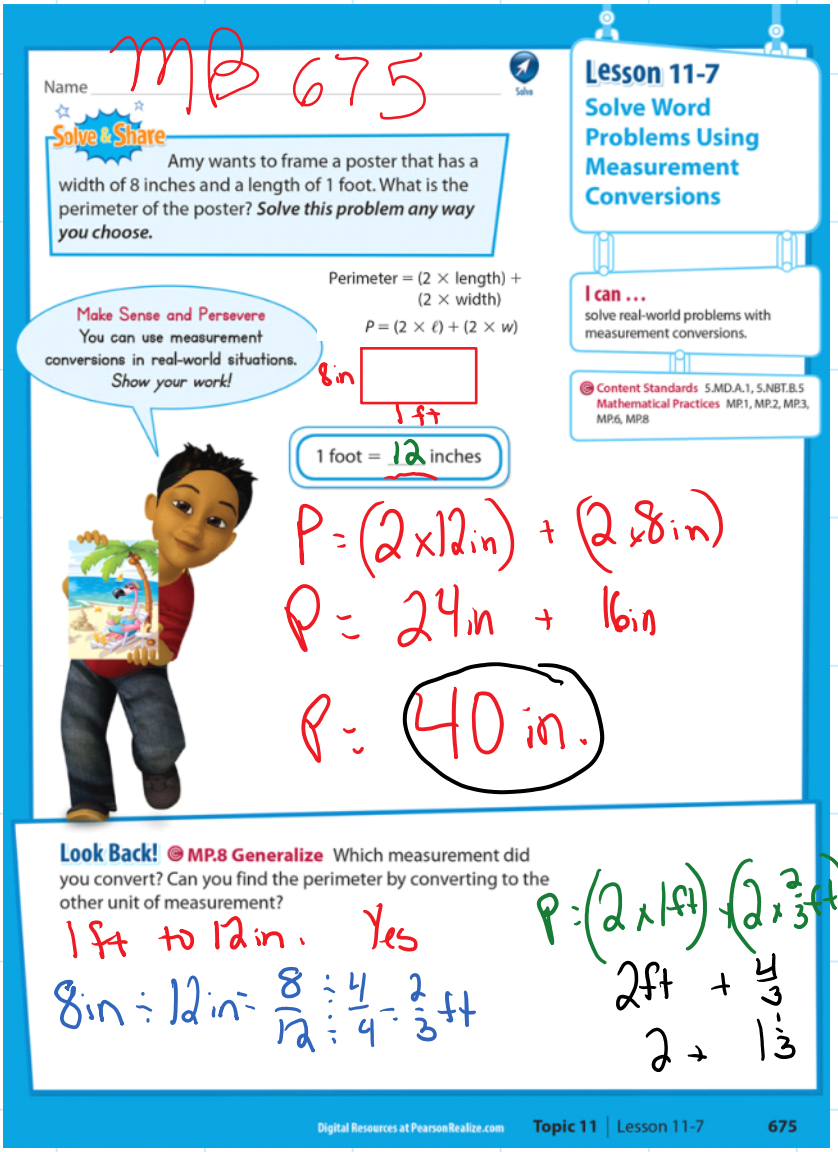
Lesson 11-7

Tuesday, February 25, 2020 1:18 PM



MP 675

Name

Solve & Share

Amy wants to frame a poster that has a width of 8 inches and a length of 1 foot. What is the perimeter of the poster? ***Solve this problem any way you choose.***

Make Sense and Persevere
You can use measurement conversions in real-world situations. *Show your work!*

Perimeter = (2 × length) + (2 × width)

$P = (2 \times \ell) + (2 \times w)$

8 in

1 ft

1 foot = 12 inches

$P = (2 \times 12\text{in}) + (2 \times 8\text{in})$

$P = 24\text{in} + 16\text{in}$

$P = 40\text{ in.}$

Lesson 11-7
Solve Word Problems Using Measurement Conversions

I can ...
solve real-world problems with measurement conversions.

Content Standards 5.MD.A.1, 5.NBT.B.5
Mathematical Practices MP.1, MP.2, MP.3, MP.6, MP.8

Look Back! **MP.8 Generalize** Which measurement did you convert? Can you find the perimeter by converting to the other unit of measurement?

1 ft to 12 in. Yes

$8\text{in} \div 12\text{in} = \frac{8}{12} \div \frac{4}{4} = \frac{2}{3}\text{ft}$

$P = (2 \times 1\text{ft}) + (2 \times \frac{2}{3}\text{ft})$

$2\text{ft} + \frac{4}{3}$

$2 + 1\frac{1}{3}$

$= 3\frac{1}{3}\text{ft}$

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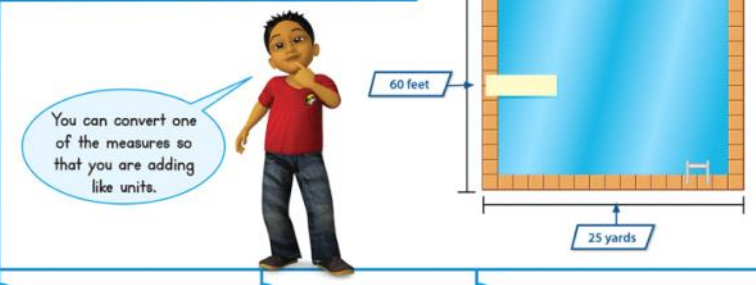
Essential Question: How Can You Convert Units of Measurement to Solve a Problem?

A *A city pool is in the shape of a rectangle with the dimensions shown. What is the perimeter of the pool?*

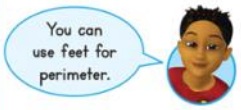


B *What do you know?*

The dimensions of the pool:
$\ell = 25$ yards
$w = 60$ feet

What are you asked to find?

The perimeter of the pool



C Convert 25 yards to feet so you can add like units.

1 yard = 3 feet

To change from larger units to smaller units, multiply.

25×3 feet = 75 feet

So, 25 yards = 75 feet.

D Substitute like measurements into the perimeter formula.

Perimeter = (2 × length) + (2 × width)

$P = (2 \times \ell) + (2 \times w)$

$P = (2 \times 75) + (2 \times 60)$

$P = 150 + 120$

$P = 270$ feet

The perimeter of the pool is 270 feet.

Convince Me! MP.6 Be Precise If the width of the pool is increased by 3 feet, what would be the new perimeter of the pool? Explain.

270 + (2x3) = P

270 + 6 = 276 ft

6 ft are added to the perimeter because of 2 sides increasing.

Name _____

Guided Practice*

Do You Understand?

1. In the example on the previous page, how could you find the perimeter by converting all measurements to yards?

2. Write a real-world multiple-step problem that involves measurement.

Do You Know How?

3. Stacia needs enough ribbon to wrap around the length (ℓ) and height (h) of a box. If the length is 2 feet and the height is 4 inches, how much ribbon will she need?

4. If ribbon is sold in whole number yards and costs $1.50 per yard, how much will it cost Stacia to buy the ribbon?

Independent Practice

In **5–7**, use conversions to solve each problem.

5. Becca wants to edge her hexagonal garden with brick. All sides are equal. The brick costs $6 per yard. What is the perimeter of the garden? How much will it cost to buy the edging she needs?

12 ft ÷ 3 ft = 4 yds
4 yds × 6 sides = 24 yds
24 yds × $6 = $144

6. Isaac buys milk to make milkshakes for his friends. He buys 1 quart of milk and $\frac{1}{2}$ gallon of milk. How many cups of milk does he buy?

1 qt × 2 pts = 2 pts 2 pts × 2 c = 4 c
$\frac{1}{2}$ gal × 4 qt = $\frac{4}{2}$ = 2 qt 2 qt × 2 pt = 4 pt 4 pt × 2 c = 8 c
4 c + 8 c = 12 c

$1\frac{1}{2}$ + $\frac{1}{2}$ + $\frac{3}{4}$ = $2\frac{3}{4}$

7. Maggie buys $1\frac{1}{2}$ pounds of walnuts, 8 ounces of pecans, and $\frac{3}{4}$ pound of almonds. How much do the nuts weigh in all?

8 ounces ÷ 16 = $\frac{8}{16}$ = $\frac{1}{2}$ lb.

2 pounds 12 ounces
44 ounces
$2\frac{3}{4}$ pounds

$2\frac{3}{4}$ × 16

$1\frac{1}{4} \times \frac{16}{1} = \frac{44}{1} = 44$
$\frac{3}{4} \times \frac{16}{1} = \frac{48}{4} = 12$ oz

*For another example, see Set G on page 690.

Complete 6, 10, & 13

Math Practices and Problem Solving*

8. **MP.2 Reasoning** Matt's family is thinking about buying a family pass to the city pool. The pass is $80 for a family of 4. Individual passes are $25 each. How much money can Matt's family save by purchasing a family pass instead of 4 individual passes?

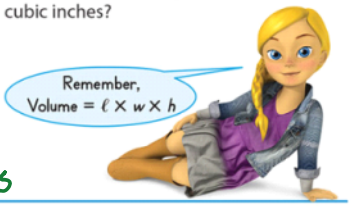
9. Marcia walked 900 meters on Friday. On Saturday, she walked 4 kilometers. On Sunday, she walked 3 kilometers, 600 meters. How many kilometers did Marcia walk over the weekend?

10. **Higher Order Thinking** Raul wants to put wood shavings in his rabbit's cage. The floor of the cage measures 1 yard wide by 5 feet long. One bag of shavings covers 10 square feet. How many bags will Raul have to buy to cover the floor of the cage? Explain.

1 yd = 3 ft
A = l × w
A = 5 ft × 3 ft = 15 ft²
15 ft² + 10 ft² = 25 ft²
2 bags

Area

11. Cheryl's fish tank is 2 yards long by 24 inches wide by 3 feet high. What is the volume of Cheryl's tank in cubic inches?



12. Some statistics about a typical adult Royal antelope are shown in the data table.

An Adult Royal Antelope

Head and body	

DATA

12. Some statistics about a typical adult Royal antelope are shown in the data table.

a What is a typical Royal antelope's tail length in millimeters?

b How many centimeters high can a typical Royal antelope jump?

c What is the mass of a typical Royal antelope in grams?

DATA

An Adult Royal Antelope	
Head and body length	43 cm
Tail length	6 cm
Mass	2.4 kg
Vertical leap	2 m

Common Core Assessment

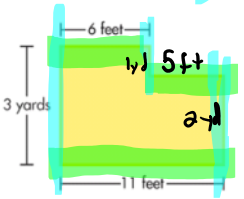
13. Joann wants to put a wallpaper border around her room. The border costs $3 per foot. The diagram shows Joann's room. How much money will the border cost?

Ⓐ $120

Ⓑ $102

Ⓒ $84

Ⓓ $60



3yd x 3ft = 9ft

P = (2x9) + (2x11)

18ft + 22ft

40 ft

40 ft

x $3

$120

Ⓐ

Name _____

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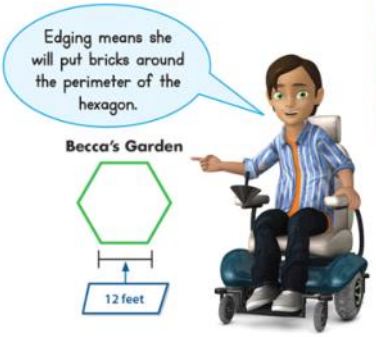

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