math Antics Worksheets

Name: _____

Date: _____

Cross Multiplying to Find an Unknown

PRO 1

Instructions: For each of these proportions (without units), use the cross-multiplying procedure you learned in the video to solve for the unknown number 'n'.

1 $\frac{n}{9} = \frac{2}{3}$

$n \times 3 = 9 \times 2$

$\frac{n \times 3}{3} = \frac{18}{3}$

$n = 6$

2 $\frac{5}{n} = \frac{2}{8}$

$5 \times 8 = n \times 2$

$\frac{40}{2} = \frac{n \times 2}{2}$

$n = 20$

3 $\frac{n}{4} = \frac{12}{6}$

$n \times 6 = 4 \times 12$

$\frac{n \times 6}{6} = \frac{48}{6}$

$n = 8$

4 $\frac{2}{9} = \frac{n}{45}$

$2 \times 45 = 9 \times n$

$\frac{90}{9} = \frac{9 \times n}{9}$

$n = 10$

5 $\frac{3}{8} = \frac{n}{32}$

$3 \times 32 = 8 \times n$

$\frac{96}{8} = \frac{8 \times n}{8}$

$n = 12$

6 $\frac{7}{3} = \frac{21}{n}$

$7 \times n = 3 \times 21$

$\frac{7 \times n}{7} = \frac{63}{7}$

$n = 9$

7 $\frac{7}{3} = \frac{35}{n}$

$7 \times n = 3 \times 35$

$\frac{7 \times n}{7} = \frac{105}{7}$

$n = 15$

8 $\frac{n}{6} = \frac{5}{30}$

$n \times 30 = 6 \times 5$

$\frac{n \times 30}{30} = \frac{30}{30}$

$n = 1$

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Proportion Word Problems

PRO 3

Instructions: Use proportions to answer each of these word problems. You can use a calculator.

1 If 2 liters of sea water contain 70 grams of salt, how much salt is in 32 liters of sea water?

$$\frac{70 \text{ grams}}{2 \text{ liters}} = \frac{n \text{ grams}}{32 \text{ liters}}$$

$$70 \times 32 = 2 \times n$$

$$\frac{2{,}240}{2} = \frac{2 \times n}{2}$$

n = 1,120 grams

2 If it takes 930 kg of food to feed a pair of elephants for 3 days, how much food would you need to feed them for a week?

$$\frac{930 \text{ kg}}{3 \text{ days}} = \frac{n \text{ kg}}{7 \text{ days}}$$

$$930 \times 7 = 3 \times n$$

$$\frac{6{,}510}{3} = \frac{3 \times n}{3}$$

n = 2,170 kg

3 If a fuel efficient car can go 210 miles on 4 gallons of fuel, how far can it go on 12 gallons?

$$\frac{210 \text{ mi}}{4 \text{ gal}} = \frac{n \text{ mi}}{12 \text{ gal}}$$

$$210 \times 12 = 4 \times n$$

$$\frac{2{,}520}{4} = \frac{4 \times n}{4}$$

n = 630 mi

4 If a farmer gets 340 bushels of corn from 2 acres of land, how many bushels can they get from 15 acres?

$$\frac{2 \text{ acres}}{340 \text{ bushels}} = \frac{15 \text{ acres}}{n \text{ bushels}}$$

$$2 \times n = 340 \times 15$$

$$\frac{2 \times n}{2} = \frac{5{,}100}{2}$$

n = 2,550 bushels

5 A factory can make 20 toasters in a half-hour (0.5 hrs) How many toasters can the factory make in 6.5 hours?

$$\frac{20 \text{ toasters}}{0.5 \text{ hours}} = \frac{n \text{ toasters}}{6.5 \text{ hours}}$$

$$20 \times 6.5 = 0.5 \times n$$

$$\frac{130}{0.5} = \frac{0.5 \times n}{0.5}$$

n = 260 toasters

6 On a scaled drawing, a building measures 4.5 cm tall. If the scale of the drawing is 25 meters per 2 cm, how tall is the actual building?

$$\frac{2 \text{ cm}}{25 \text{ m}} = \frac{4.5 \text{ cm}}{n \text{ m}}$$

$$2 \times n = 25 \times 4.5$$

$$\frac{2 \times n}{2} = \frac{112.5}{2}$$

n = 56.25 m

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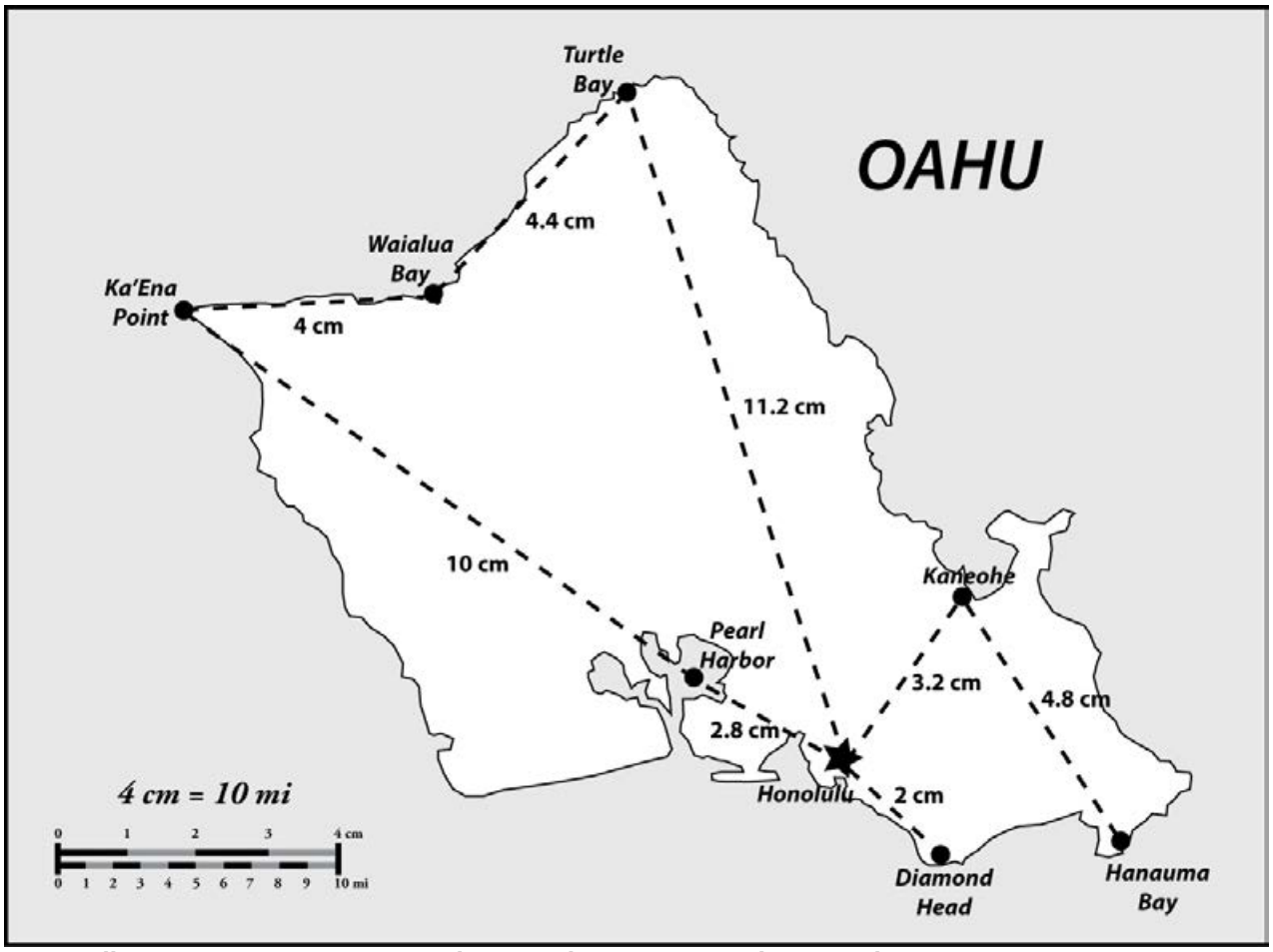
Scaled Drawing Problems - page 1

PRO 5

Instructions: Use this map to answer the questions below and on the following page.



note: all measurements are approximate, printout may not be to scale

1 How many miles is it from Honolulu to Diamond Head?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{2 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 2$$

$$\frac{4 \times n}{4} = \frac{20}{4}$$

$n = 5$ miles

2 How many miles is it from Honolulu to Pearl Harbor?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{2.8 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 2.8$$

$$\frac{4 \times n}{4} = \frac{28}{4}$$

$n = 7$ miles

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Scaled Drawing Problems - page 2

PRO 6

Instructions: Use the map on the previous page to answer these questions.

see previous page

3 How many miles is it from Honolulu to Turtle Bay?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{11.2 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 11.2$$

$$\frac{4 \times n}{4} = \frac{112}{4}$$

n = 28 miles

4 How many miles is it from Turtle Bay to Waialua Bay?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{4.4 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 4.4$$

$$\frac{4 \times n}{4} = \frac{44}{4}$$

n = 11 miles

5 How many miles is it from Pearl Harbor to Ka'Ena Point?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{10 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 10$$

$$\frac{4 \times n}{4} = \frac{100}{4}$$

n = 25 miles

6 How many miles is it from Honolulu to Kaneohe?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{3.2 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 3.2$$

$$\frac{4 \times n}{4} = \frac{32}{4}$$

n = 8 miles

7 How many miles is it from Kaneohe to Hanauma Bay?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{4.8 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 4.8$$

$$\frac{4 \times n}{4} = \frac{48}{4}$$

n = 12 miles

8 How many miles is it from Ka'Ena Point to Waialua Bay?

$$\frac{4 \text{ cm}}{10 \text{ mi}} = \frac{4 \text{ cm}}{n \text{ mi}}$$

$$4 \times n = 10 \times 4$$

$$\frac{4 \times n}{4} = \frac{40}{4}$$

n = 10 miles