Key

Algebra 1
Unit 2, Lesson 5 notes
Use formulas to solve word problems

Area
Triangle: $A = \frac{1}{2}bh$
Rectangle: $A = lw$
Circle: $A = \pi r^2$

Distance
$D = rt$

Simple Interest
$I = prt$

Perimeter – add up all sid
$P = 2L + 2W$ → □ or ▭

Circumference
$C = \pi d$ or $2\pi r$

1. Find the height of a triangle if the base is 10 cm and the area is 40 cm.

$A = \frac{1}{2}bh$ $\quad 40 = 5h$ $\quad$ 8 cm
$40 = \frac{1}{2} \cdot 10 \cdot h$ $\quad 8 = h$

2. Find the radius of a circle whose circumference is 32 meters.

$C = 2\pi r$ $\quad \frac{32}{2\pi} = r$ $\quad r = \frac{16}{\pi} \approx$ 5.09 m
$32 = 2\pi r$

3. Find the width of the garden:

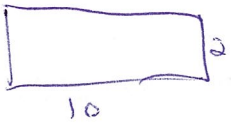
Perimeter = 44 feet

x + 3
5 ft.

2x + 4
14 ft.

$44 = 2L + 2W$
$44 = 2(2x+4) + 2(x+3)$
$44 = 4x + 8 + 2x + 6$
$44 = 6x + 14$
$30 = 6x$
$x = 5$

4. Patricia has a rectangular flower garden that is 10 feet long and 2 feet wide. One bag of soil can cover 10 ft^2. How many bags will she need to cover the entire garden?



$A = 10 \cdot 2 = 20$

She will need 2 bags of soil

5. The Acela train travels between Boston and Washington, a distance of 457 miles. The trip takes 6.5 hours. What is the average speed of the train?

$d = rt$ $\quad \frac{457}{6.5} = r$ $\quad r = 70.31$ mph
$457 = 6.5 \times r$

6. A jet flies at an average speed of 540 miles per hour. How long will it take to fly from New York to Tokyo, a distance of 6,670 miles?

$6670 = 540t$

$\frac{6670}{540} = t$

$t = 12.35$ hours

7. Kelly plans to put her graduation money into an account and leave it there for 4 years while she goes to college. She receives $750 in graduation money that she puts into an account that earns 4.25% simple interest. How much will be in Kelly's account at the end of four years?

$I = prt$

$I = 750 \cdot .0425 \cdot 4$

$I = 127.50$

$750 + 127.50 =$ $877.50

8. Jamie wants to earn $500 in interest so she'll have enough to buy a used car. She puts $2,000 into an account that earns 5% simple interest. How long will she need to leave her money in the account to earn $500 in interest?

$I = prt$

$500 = 2000 \cdot .05 \cdot t$

$t = 5$

She needs to leave her $ in the account for 5 yrs.

9. The penny size d of a nail is given by $d = 4n - 2$ where n is the length (in inches) of the nail.

   a. Solve the formula for n

$\frac{d+2}{4} = \frac{4n}{4}$

$n = \frac{d+2}{4}$

   b. Use the new formula to find the lengths of nails with the following penny sizes: 5, 12, 16, and 20.

5: $n = \frac{5+2}{4} = \frac{7}{4}$ inches

12: $n = \frac{12+2}{4} = \frac{14}{4} = \frac{7}{2}$ inches

16: $n = \frac{16+2}{4} = \frac{18}{4} = \frac{9}{2}$ inches

20: $n = \frac{20+2}{4} = \frac{22}{4} = \frac{11}{2}$ inches