Warm up

Make sure name is on your homework and turn into the basket at the front

1) Multiply

$-10x(10x^2-4x+3)$

$-100x^3+40x^2-30x$

2) Simplify

$\sqrt{45}-2\sqrt{18}+\sqrt{5}$

$3\sqrt{5}-2\cdot3\sqrt{2}+\sqrt{5}$

$3\sqrt{5}-6\sqrt{2}+\sqrt{5}$

$4\sqrt{5}-6\sqrt{2}$

3) Convert

60 miles/hr into ft/min

$\frac{60\text{ miles}}{1\text{ hr}}\cdot\frac{5280\text{ ft}}{1\text{ mile}}\cdot\frac{1\text{ hr}}{60\text{ min}}$

5280 ft/min

Module 0.10
Relationships Between Quantities & Expressions

Name:

How would you define perimeter?

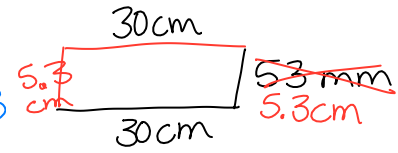
Adding all sides

How would you calculate the perimeter of a square?

Add 4 sides

1. A rectangle has a length of 30 cm and height of 53 mm. What is the perimeter of this rectangle in centimeters?

1 left
53 mm = 5.3 cm



30
+30
+5.3
+5.3
= 70.6 cm

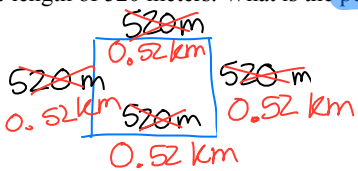
2. A rectangle has a length of 45 feet and height of 20 yards. What is the perimeter of this rectangle in feet?

$\frac{20\text{yd}}{1} \cdot \frac{3\text{ft}}{1\text{yd}} = 60\text{ft}$ 1yd = 3ft

45+60+45+60 = 210 ft

3. A square has a side length of 520 meters. What is the perimeter of the square in kilometers?

1 left 3
520 m = 0.520 km

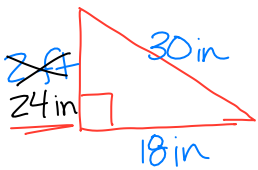


0.52 + 0.52 + 0.52 + 0.52
2.08 km

4. A right triangle has legs of 2 feet and 18 inches. What is the perimeter of the triangle in inches?

$a^2 + b^2 = c^2$

1 ft = 12 in



$\frac{2\text{ft}}{1} \cdot \frac{12\text{in}}{1\text{ft}} = 24\text{in}$

$24^2 + 18^2 = c^2$

$900 = c^2$

$c = 30$

18
+30
+24
72 in

How would you define area?

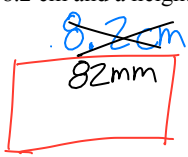
Multiply

How would you calculate the area of a rectangle? A triangle?

$l \cdot w$ $\frac{1}{2}bh$

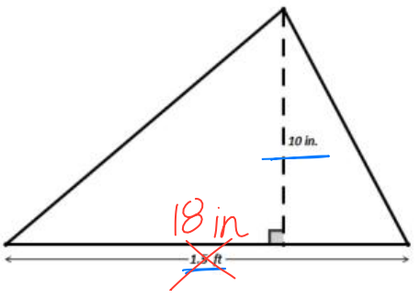
5. A rectangle has a length of 8.2 cm and a height of 42 mm. What is the area of the square in square millimeters?

1 right
8.2 cm = 82 mm



82 · 42 =
3444 mm^2

6. Find the area of the triangle shown below in square inches.



$\frac{1}{2}bh$

$12in = 1ft$

$\frac{1.5ft}{1} \cdot \frac{12in}{1ft} = 18in$

$\frac{1}{2}(18)(10) = 90in^2$

7. A square has a side of length 1.6 yards. What is the area of the square in square inches?

$57.6 \cdot 57.6 =$

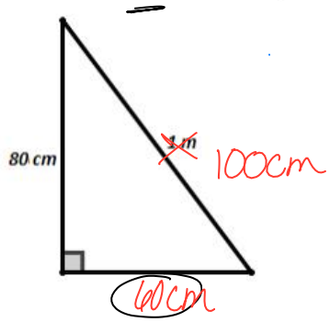
1.6yd = 57.6in

$3317.76in^2$

$1yd = 3ft \quad 12in = 1ft$

$\frac{1.6yd}{1} \cdot \frac{3ft}{1yd} \cdot \frac{12in}{1ft} = 57.6in$

8. Find the area of the triangle shown below in square centimeters.



2 right

$l \cdot w = 100cm$

$a^2 + b^2 = c^2$

$80^2 + b^2 = 100^2$

$-80^2 \quad -80^2$

$b^2 = 100^2 - 80^2$

$b^2 = 3600$

$b = 60$

$\frac{1}{2}bh$

$\frac{1}{2}(60)(80) =$

$2400cm^2$

9. A rectangle has an area of $12m^2$ and a length of 400 cm. What is the width of the rectangle?

a. 3 cm b. 30 cm c. 300 cm d. 3000 cm

$l \cdot w = Area$

$\frac{4 \cdot w}{4} = \frac{12}{4} \quad w = 3m$

300cm

$12m^2$

$\frac{400cm}{4m}$

left 2

$400 = 4$

10. The length of a football field is 100 yards. Which of the following would be equivalent (the same) to the length of a football field?

a. 300 feet b. 100 meters c. 9,144 cm d. 914.4 cm e. 10,000 cm

$\frac{100yds}{1} \cdot \frac{3ft}{1yd} = 300ft \quad 3ft = 1yd$

$1in = 2.54cm$

$100cm = 1m$

$12in = 1ft$

$\frac{300ft}{1} \cdot \frac{12in}{1ft} \cdot \frac{2.54cm}{1in} = 9144cm$

$91.44m$