

Aug 2015 # 34-37

34 a $x \geq 6$
b 6, 7, 8

36 a $y = .16x + 8.27$
b $r = .97$
Strong Association

35 a $r = \sqrt{\frac{V}{\pi h}}$
b 5

37 a $(2x+6)(2x+8) \leq 100$
b 1.5 in.

Name: _____ Date: _____

Regents Review: Unit Conversions (Dimensional Analysis) and Rewriting Formulas (Literal Equations)**High School Math Reference Sheet**

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1000 cubic centimeters

Make the following conversions using dimensional analysis.

- Jack has a nail that is 5 cm long. How long is it in inches?
- Sarah's college roommate from France says she weighs 52 kg, but Sarah wants to know how much she weighs in pounds.
- How many ounces are there in 2.5 tons?
- How many miles are there in 205,920 inches?
- The coach has 4 gallons of lemonade for his team, but he needs to know how many 8oz cups it will fill.
- Heather rented a car, which could travel 18 kilometers per liter, while vacationing in Europe. How many miles per gallon is this?

7. Peyton is a sprinter who can run the 40-yard dash in 4.5 seconds. He converts his speed into miles per hour, as shown below.

$$\frac{40 \text{ yd}}{4.5 \text{ sec}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

Which ratio is *incorrectly* written to convert his speed?

Rewrite the following formulas as instructed.

8. The formula for the area of a parallelogram is $A = bh$. Express b in terms of A and h .
9. The formula for the area of a triangle is $A = \frac{1}{2}bh$. Express h in terms of A and b .

10. The formula for the perimeter of a rectangle is $P = 2l + 2w$. Express l in terms of P and w .
11. The formula for the area of a circle is $A = \pi r^2$. Solve for r .
12. The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$. Express h in terms of A , b_1 , and b_2 .
13. The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$. Express b_1 in terms of A , h , and b_2 .

14. The formula for the volume of a cone is $V = \frac{1}{3}\pi r^2 h$. The radius, r , of the cone may be expressed as

(1) $\sqrt{\frac{3V}{\pi h}}$

(3) $3\sqrt{\frac{V}{\pi h}}$

(2) $\sqrt{\frac{V}{3\pi h}}$

(4) $\frac{1}{3}\sqrt{\frac{V}{\pi h}}$

15. The equation for the volume of a cylinder is $V = \pi r^2 h$. The positive value of r , in terms of h and V , is

(1) $r = \sqrt{\frac{V}{\pi h}}$

(3) $r = 2V\pi h$

(2) $\sqrt{V\pi h}$

(4) $r = \frac{V}{2\pi}$

16. The perimeter formula for a rectangle is $p = 2(l + w)$ where p represents the perimeter, l represents the length, and w represents the width. Find the length, **in cm**, of a painting whose perimeter is **70 inches** and width is **15 in**.

Solve the problem two ways.

Substitute Values in First

Rearrange Formula First

Name: _____

Regents Review: Factoring Completely

Date: _____

Algebra I

Factor the following polynomials.

1. $3b^2 + 24b + 45$

2. $z^3 - 64z$

3. $2x^2 - 28x + 98$

4. $6x^2 + 6x - 120$

5. $3a^3 - 12a^2 - 63a$

6. $-z^3 - 7z^2 - 12z$

7. $-5w^3 - 40w^2 - 80w$

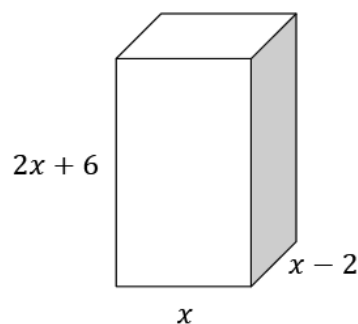
8. $5x^2 - 125$

9. $2x^6 + 8x^3 + 6$

10. $7x^8 - 567$

11. Use the figure to answer the questions below.

- a. Use the formula $V = l \cdot w \cdot h$ to create a trinomial to describe the volume of the rectangular prism.



- b. Completely factor the trinomial from part a.
- c. Why are the factors from part b different than the length, width and height shown in the figure above?