

Review Sheet Math Final 7th Grade

Lesson 50-80

Focus on the Following Lessons: 51, 54, 56, 57, 63, 66, 69, 71, 74, 76, 78

Negative Exponents

$$x^{-b} = \frac{1}{x^b}$$

Scientific Notation

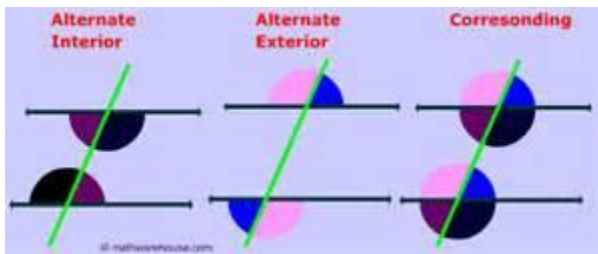
Standard Form

6.02×10^{23}

a real number with an absolute value between 1 and 10

an order of magnitude value written as a power of 10

Angle Relationships



Complementary Angles
Add up to 90°

Example: What is the complement of 30° ?
Answer: $90 - 30 = 60$

Supplementary Angles
Add up to 180°

Example: What is the supplement of 45° ?
Answer: $180 - 45 = 135$

Slope Intercept Equation

SLOPE-INTERCEPT FORM

$y = mx + b$

slope m intercept b

$m = 2$

y-intercept = $(0, 3)$

$y = 2x + 3$

Operations with Scientific Notation

Multiplication	Division
$(2.5 \times 10^{17}) \times (5.0 \times 10^{14})$ Multiply these two... $(2.5 \times 10^{17}) \times (5.0 \times 10^{14})$...And then add these two together $2.5 \times 5.0 = 12.5$ $17 + 14 = 31$ $12.5 \times 10^{31} = 1.25 \times 10^{32}$	$\frac{2.5 \times 10^{17}}{5.0 \times 10^{14}}$ Just divide these two... $\frac{2.5}{5.0} \cdot \frac{10^{17}}{10^{14}}$ Then subtract the bottom from the top $2.5 / 5.0 = 0.5$ $17 - 14 = 3$ $0.5 \times 10^3 = 5.0 \times 10^2$

Fractions with Negative Exponents

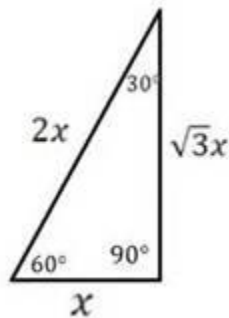
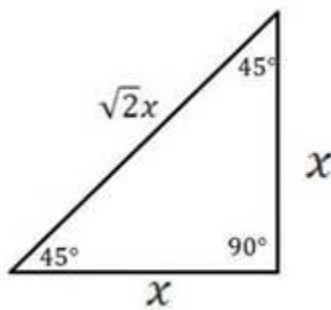
$$x^{-b} = \frac{1}{x^b}$$

"Negative Exponents"
Properties of Exponents

$$\frac{2^{-2}}{4^{-3}} = \frac{4^3}{2^2} = \frac{64}{4} \quad \frac{2x^{-2}}{4y^{-3}} = \frac{2y^3}{4x^2}$$

$$\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$$

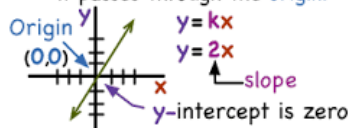
Special Right Triangles



Direct Variation

Graph of Direct Variation

This line is a direct variation because it passes through the origin.



Percent Change of Dimensions

Dilation: Percent of Original = 100% + Percent of Increase

Reduction: Percent of Original = 100% - Percent of Decrease

Simplifying Square Roots

Simplify

$$\sqrt{72} = \sqrt{36 \cdot 2}$$

$$\sqrt{72} = \sqrt{36} \cdot \sqrt{2}$$

$$\sqrt{72} = 6\sqrt{2}$$

1
4
9
16
25
36
49
64
81
100
121
144
169
196
225

Method 1

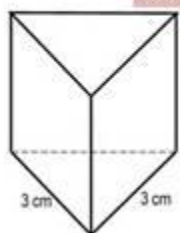
$$\begin{aligned}\sqrt{32} &= \sqrt{16 \times 2} \\ &= \sqrt{16} \times \sqrt{2} \\ &= 4\sqrt{2}\end{aligned}$$

Method 2

$$\begin{aligned}\sqrt{32} &= \sqrt{2 \times 16} \\ &= \sqrt{2 \times 2 \times 8} \\ &= \sqrt{2 \times 2 \times 2 \times 4} \\ &= \sqrt{2 \times 2 \times 2 \times 2 \times 2} \\ &= \sqrt{2 \times 2} \times \sqrt{2 \times 2} \times \sqrt{2} \\ &= 2 \times 2 \times \sqrt{2} \\ &= 4\sqrt{2}\end{aligned}$$

Volume of Prisms and Cylinders

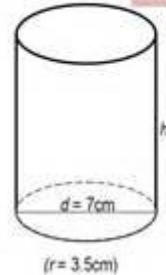
Volume of Prisms
Volume (V) of Prism = area of base (B) × height (h)



h = 6 cm

Area of triangle = $\frac{1}{2}bh$
Area of base (B) = $\frac{1}{2}(3\text{cm} \times 3\text{cm}) = 4.5\text{cm}^2$
Volume = $4.5\text{cm}^2 \times 6\text{cm} = 27\text{cm}^3$

Volume of Cylinders
Volume (V) of Cylinder = area of base (B) × height (h)



h = 20 cm

d = 7 cm
(r = 3.5 cm)

Area of circle = πr^2
Area of base (B) = $\pi(3.5\text{cm})^2 \approx 38.48\text{cm}^2$
Volume = $20\text{cm} \times \pi(3.5\text{cm})^2 \approx 770\text{cm}^3$

Products of Square Roots

a) $\sqrt{2} \times \sqrt{3} = \sqrt{2 \times 3} = \sqrt{6}$

b) $\sqrt{1.2} \times \sqrt{0.3} = \sqrt{0.36} = 0.6$

c) $\sqrt{\frac{3}{4}} \times \sqrt{\frac{1}{5}} = \sqrt{\frac{3}{4} \times \frac{1}{5}} = \sqrt{\frac{3}{20}}$