

Advanced 7th Grade - Unit 4 Review

Include your formulas (work) and units. Use 3.14 for pi.

1. Evaluate the expression; Answers should not include exponents.

a. $\left(\frac{1}{3}\right)^3 \frac{1}{3^3} = \frac{1}{27}$

d. $\frac{1}{2}(7^2 + 3) \frac{1}{2}(49+3)$
 $\frac{1}{2}(52) = 26$

g. $(-2 + 3)^2 = 1$

b. $(-4)^2 = 16$

e. $-2^4 = -16$

h. $(2x)^0 = 1$

c. $\frac{3}{4^2} + \frac{5}{2^3}$
 $\frac{3}{16} + \frac{5}{8} = \frac{13}{16}$

f. $9^2 - 6^3$
 $81 - 216 = -135$

i. $(2p)^{-3}$
 $\frac{1}{8p^3}$

2. Simplify the expression; Answers can include positive exponents.

a. $\left(\frac{a}{b}\right)^3 = \frac{a^3}{b^3}$

d. $(a^5b)^3 = a^{15}b^3$

g. $(x+x)^3 = 2x^3$

4096a⁴ ←

b. $\frac{(4a)^6}{a^2}$ ~~4096a⁶~~

e. $-g^6 = -g^6$

h. $8x^0 = 8$

c. $\frac{3^2x^4}{27x} = \frac{1x^3}{3} = \frac{x^3}{3}$

f. $a^2 \cdot a^7 = a^9$

i. $(4h)^{-2} = \frac{1}{16h^2}$

3. Write the number in scientific form.

a. 1,234,500
 1.2345×10^6

c. 98,000,000
 9.8×10^7

e. 0.0000009
~~9~~ 9×10^{-7}

b. 7.0040
 7.004×10^0

d. 0.00067
 6.7×10^{-4}

f. 605,000
 6.05×10^5

4. Write the number in standard form.

a. 3.476×10^5
 347,600

c. 4.06×10^9
 4,060,000,000

e. 6.7×10^{-6}
 0.0000067

b. 1.2×10^{-3}
 0.0012

d. 8×10^{10}
 80,000,000,000

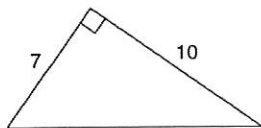
f. 5.55×10^{-1}
 0.555

5. State the Pythagorean Theorem.

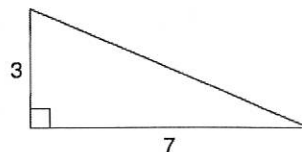
$$a^2 + b^2 = c^2$$

6. Find the missing length in the right triangles.

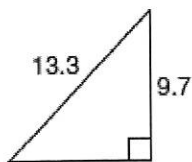
a. 12.2



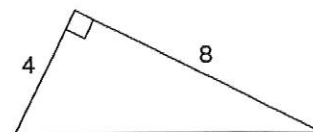
d. 7.6



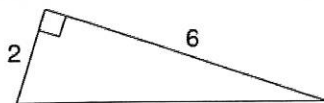
b. 9.1



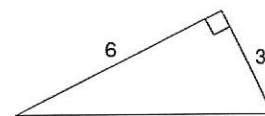
e. 8.9



c. 6.3

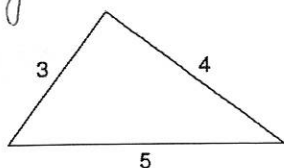


f. 6.7

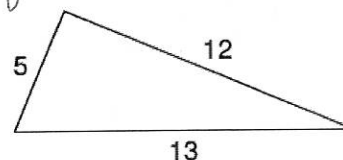


7. Prove whether the triangles below are in fact right triangles.

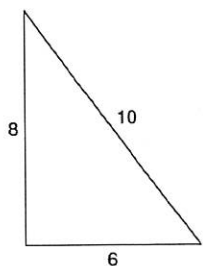
a. yes



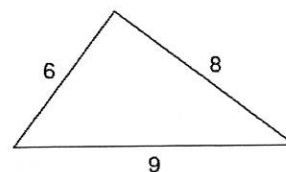
c. yes



b. NO



d. NO



176.89
94.09

8. Compare and contrast irrational and rational numbers. Give 3 examples of each type of real number.

Rational numbers can be written as a ratio (fraction). Irrational cannot. Rational contain decimals that repeat and terminate, irrational have decimals that do not.

9. Find the surface area and the volume of the figures below.

a. $SA = 3,818 \text{ ft}^2$

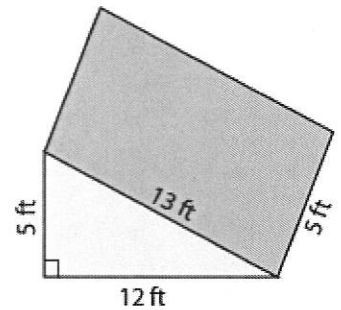
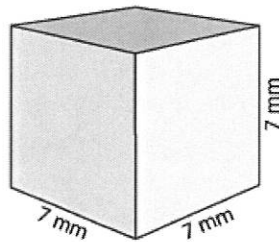
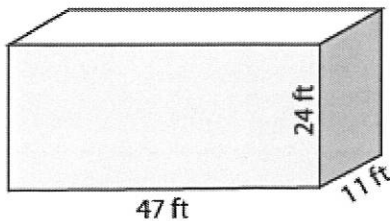
b. $SA = 294 \text{ ft}^2$

c. $SA = 210 \text{ ft}^2$

$V = 12,408 \text{ ft}^3$

$V = 343 \text{ ft}^3$

$V = 150 \text{ ft}^3$



$$\begin{aligned} 47(11) &= 517 \\ 47(24) &= 1128 \\ 24(11) &= 264 \\ \hline &1909 \end{aligned}$$

$$\begin{aligned} &60 \\ &25 \\ &60 \\ &65 \end{aligned}$$

10. If you double the height of question (a) above, what happens to the volume and surface area of the prism?

New $h = 48$

$$V = 24,816$$

$$SA = 817$$

$$\begin{aligned} 47(48) &= 2256 \\ &264 \\ \hline &3037 \times 2 = 6074 \end{aligned}$$

The volume doubles and SA has ^{only} 2 sides that double so it just increases to 6074 ft^2 .