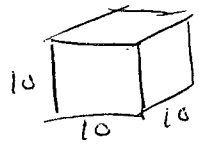
Pm 9 Ch 2 Check Up Name: Key

1. Sketch models to represent the following:

a) 7^2

b) 1000 cm^3

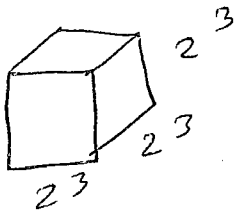


2. A cube has a volume of 512 cm^3.

a) Write the dimensions as powers with the lowest base.

$512 = 2^9 \rightarrow x^3 = (2^{\square})^3$

$\square = 3$



b) Write the surface area as a power

$S_A = 6 \times s^2$

$= 6 \times (2^3)^2 \rightarrow 6 \times 2^6$

3. Find a number that can be shown as both a square and a cube $64 = 8^2$, $64 = 4^3$

Evaluate

a) -5^2 -25

b) $(-3)^4$ 81

c) $-(-4)^3$ 64

4. Arrange in order from least to greatest

$(-3)^2$, -3^2, $(-1)^{50}$, $(-1)^{27}$, $(-3)^4 \rightarrow -9, -1, 1, 9, 81$

~~9~~ 9, -9, 1, -1, 81 $\rightarrow -3^2, (-1)^{27}, (-1)^{50}, (-3)^2, (-3)^4$

5. Express the following as a single power

a) $(5^4)^3 \div (5^2)^2$

$= 5^{12} \div 5^4$

$= 5^8$

b) $(7^4)^2 (7^3)^3$

$(7^8)(7^9)$

$= 7^{17}$

6. Complete the following

a) $2^{10} = 4^?$

$? = 5$

b) $125^4 = 5^?$

$? = 12$

c) $9^6 = 27^?$

$(3^2)^6 = (3^3)^{\square}$

$3^{12} = 3^{3\square}$

$\square = 4$

7. Simplify as a power

a) $\frac{(x^3)(x^6)}{x^5}$

x^4

b) $(a^4)^2 \div a^3$

a^5

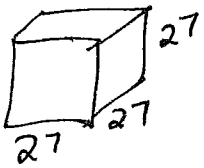
8. Express $(2^6 \times 4^2)^3$ as a power with a single base

$[2^6 \times (2^2)^2]^3 = (2^6 \times 2^4)^3$

$= (2^{10})^3 = 2^{30}$

9. A cube has sides 128 cm. $= 2^7$

a) Show the volume as a power



$V = (2^7)^3$

$= 2^{21}$

b) Show the surface area as a power

$S_A = 6 \times (2^7)^2$

$= 6 \times 2^{14}$

10. Evaluate the following

a) $7^{-2} = \frac{1}{7^2}$

$= \frac{1}{49}$

b) $(3^{-4})^2 (3^3)^{-3}$

$(3^{-8})(3^{-9})$

$= 3^{-17}$

$= \frac{1}{3^{17}}$

c) $2^{-1} + 2^{-2}$

$\frac{1}{2} + \frac{1}{2^2}$

$= \frac{1}{2} + \frac{1}{4}$

$= \frac{2}{4} + \frac{1}{4} = 3/4$

11. Simplify $9^2 \times 32^5$ as a product of powers with the lowest base

$(3^2)^2 \times (2^5)^5$

$= 3^4 \times 2^{25}$

13. Simplify without using your calculator

a) $(-7)^2 - 4^2 \div 8 + (2-6)^2$

$49 - 16 \div 8 + (-4)^2$

$49 - 2 + 16$

$= 63$

b) $6^3 \div 3^2 + 2^4 - 2^3$

$216 \div 9 + 16 - 8$

$24 + 16 - 8$

$= 32$

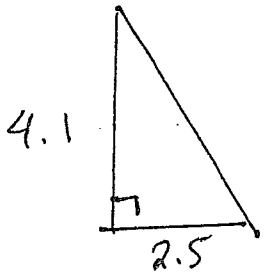
c) $\dfrac{(\sqrt{6^2+8^2}) + \sqrt{5^2} - 4^3 \div 2^6}{2^4 - 3^2 \times 4^0}$

$\dfrac{10 + 5 - 64 \div 64}{16 - 9 \times 1} = \dfrac{10+5-1}{7}$

$= \dfrac{14}{7} = 2$

14. The 2 legs of a right triangle measure 2.5 cm and 4.1 cm, respectively. Use the Pythagoras property to find the length of the hypotenuse to 2 decimal places. Sketch and label an appropriate model.

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



15. Simplify the following without the use of your calculator

a) $\sqrt{\dfrac{36}{49}}$

$= \dfrac{6}{7}$

b) $\sqrt{\dfrac{121}{9}}$

$\dfrac{11}{3}$

16. How would you verify that $\sqrt{6.25} = 2.5$, without using your square root $(\sqrt{\ })$ button on your calculator?

$(2.5)^2 = 6.25$