

# Algebra Workshop

Name: \_\_\_\_\_

## Worksheet 11

1. Solve the following equations:

(a)  $x^3 = 27$

(b)  $2x^4 - 5 = x^4 + 11$

(c)  $2x^3 + 10 = -6$

(d)  $x^3 - 5 = 8$

2. Solve the following equations:

(a)  $\sqrt[3]{x} = 2$

(b)  $x^{1/4} = 2$

(c)  $x^{-2} = 9$

(d)  $2x^{1/2} + 1 = 5$

3. Express the following numbers in scientific notation, rounded to three digits:

(a) 450,000

(b) 0.0000532

(c) 5.3 million

(d) 0.007

4. Compute the following. Express the answer in scientific notation, rounded to three digits.

(a)  $(5.83 \times 10^5) \times (6.21 \times 10^4)$

(b)  $(3.21 \times 10^{-3}) \times (5.41 \times 10^{-6})$

(c)  $\frac{3.22 \times 10^5}{8.45 \times 10^{-3}}$

(d)  $\sqrt{5.62 \times 10^8}$

5. The Earth is 4.6 billion years old. Determine the age of the Earth in seconds. Express your answer in scientific notation.

6. The Earth orbits the sun in an orbit that is approximately a circle with radius 93 million miles. Determine the circumference of this circle. Give your answer in scientific notation.

7. The radius of the Earth is  $6.3 \times 10^6$  meters. The volume of a sphere is given by the formula  $V = \frac{4}{3}\pi r^3$ . Determine the volume of the Earth. Express your answer in scientific notation.

8. The speed of light is 299,792,458 meters/second. It takes light 4.37 years to travel from Alpha Centauri to the sun.

(a) Convert 4.37 years to seconds.

(b) Determine the distance between Alpha Centauri and the sun. Give your answer in meters using scientific notation. (Recall that speed = distance/time.)

9. The mass of one oxygen molecule is  $5.3 \times 10^{-23}$  grams. Find the mass of 20,000 molecules of oxygen. Express your answer in scientific notation.