

Name

Key

Your score

18

Percent

Unit 5

Exponents and Application

Math 7+

Possible points

18

pre-test

Show work on ALL problems

8. EE. A 1: Properties

Know and apply the properties of integer exponents to generate equivalent numerical expressions.

Directions: #1-7—Evaluate the following expressions. Reduce to simplest terms.

1.

 $2^3/5^2$

$$\frac{8}{25}$$

$$\frac{2 \cdot 2 \cdot 2}{5 \cdot 5} =$$

(1pt)

2.

 $2^2/2^6$

$$2^{2-6} = 2^{-4} =$$

$$= \frac{1}{2^4} = \frac{1}{16}$$

(1pt)

3.

 $6^0 = 1$

anything
to the
zero = 1

(1pt)

4.

 $3^{-2}/2^4$

$$\frac{3^{-2}}{16} =$$

(1pt)

$$= \frac{1}{9 \cdot 16} = \frac{1}{144}$$

5.

 $(3^2)(3^4)$

$$3^{2+4} = 3^6$$

(1pt)

6.

 $(4^3)^2$

$$4^{3 \cdot 2} = 4^6$$

(1pt)

7.

 $(3^2)^4 / (3^2)(3^3)$

$$= \frac{3^8}{3^5} = 3^3 = 27$$

$3^{(8-5)}$

(1pt)

8. EE. A. 3 and 4: Scientific Notation

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.

14. Write 0.0000429 in scientific notation.

$$4.29 \times 10^{-5}$$

Loop left until you get to a decimal

1 pt

15. Express 2.45×10^5 in standard form.

$$2.45000$$

$$245,000$$

loop^s Right

1 pt

16. Multiply. Leave your final answer in scientific notation. $(6.45 \times 10^{11})(3.2 \times 10^4)$

$$6.45 \times 3.2$$

$$10^{11} \cdot 10^4 = 10^{15}$$

$$20.64$$

$$2.0640 \times 10^{11} \times 10^{15}$$

$$2.0640 \times 10^{26}$$

1 pt

17. Divide. Leave your final answer in scientific notation. No negative exponents in the denominator.

$$(3.45 \times 10^5) / (6.7 \times 10^{-2})$$

$$3.45 \div 6.7 = .515$$

$$10^5 \div 10^{-2} = 10^{5 - (-2)} = 10^7$$

$$.515 \times 10^7 = 5.15 \times 10^6$$

Final: 5.15×10^6

1 pt

18. The speed of light is 3.5×10^8 meters per second. If the sun is 1.5×10^{11} meters from earth, how many seconds does it take the light to reach the earth? Express your answer in scientific notation.

$$\frac{1.5 \times 10^{11}}{3.5 \times 10^8}$$

$$.429 \times 10^3$$

$$4.29 \times 10^{-1} \times 10^3$$

$$4.29 \times 10^2 \text{ seconds}$$

1 pt

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$$\begin{array}{r} 6.45 \\ \times 3.2 \\ \hline 1290 \\ 1935 \\ \hline 20640 \end{array}$$

8. EE. A 2: Evaluate Roots (rational/irrational)

Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

Directions: #8-13—evaluate and find all solutions

<p>8. $\sqrt{16} = 4$</p> <p>(1 pt)</p>	<p>9. $\sqrt[3]{1/27}$</p> <p>$\frac{1}{3}$</p> <p>(1 pt)</p>	<p>10. $\sqrt{x^2 + 25}$</p> <p>$x = 5$</p> <p>(1 pt)</p>
<p>11. $x^2 = 4/9$</p> <p>$x = \frac{2}{3}$</p> <p>(1 pt)</p>	<p>12. $\sqrt[3]{x^3 = 27}$</p> <p>$x = 3$</p> <p>(1 pt)</p>	<p>13. What is the length of a square with an area of 49 in^2?</p> <p>$\sqrt{49} = 7 \text{ in}$</p> <p>(1 pt)</p>