Name

HUSANS

Exponents and Scientific Notation Review

Evaluate the expression.

1) $\left(\frac{1}{3}\right)^3$ $\frac{1}{27}$	2) 2 ⁵ 3 2	³⁾ (-3) ⁴ 8/
$\frac{4}{3}\left(2^{4}+2\right)$	5) 9 ² - 4 ³ 17	$\begin{array}{c} 6) \frac{3}{4^2} + \frac{5}{2^3} \\ \frac{13}{16} \end{array}$

- 7) A new television program attracts 1.1 times as many viewers each week as the week before.
 - a. If 2 million people watch the premiere, how many watch the week after that?

22 million viewers

b. Write and evaluate an expression to find the number of viewers 4 weeks after the premiere. Round to the nearest tenth of a million.

2(1.1) 4 : 2.9 million starters

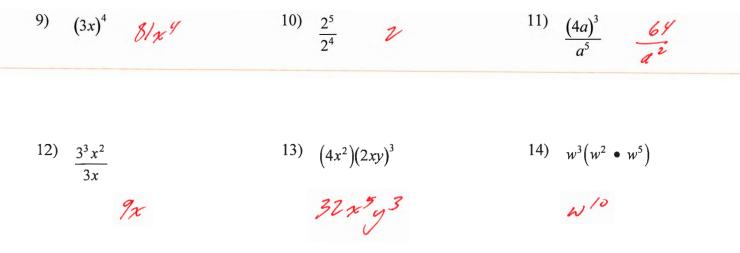
- 8) The distance traveled by a falling rock is modeled by $d = 5t^2$, where d is the distance in meters and t is the time in seconds.
 - a. Write and simplify an expression for the distance the rock falls in 2*t* seconds. Is it twice as far? Explain your reasoning.

No. Reglese t with 2t and singlify: $d = 5(2t)^2$ = $20t^2$ This is 4 times as much as the original distance.

b. The rock falls 15 meters in t seconds. How far does it fall in 2t seconds?

60 m

Evaluate the expression.



15) A pollen grain is $\frac{3}{10^3}$ centimeters wide. In an illustration, the pollen grain is 6 centimeters wide. How much larger is the illustration than the actual pollen? 2000 fines larger

16) There is 10^{-3} gram in a milligram, and there are 10^{6} grams in a metric ton. How many metric tons are there in a milligram?

Simplify. Write the expression using only positive exponents.

17) $8w^{-5}$ w^{-5} 18) $2x^{-3} \cdot 5x^{-7}$ 19) $\frac{(2g)^{-3}}{(fg)^2}$ $\frac{1}{8f^2 5}$

10-9

Write the number in standard form.

 20) 5×10^4 21) 7.9×10^{-4} 22) 6.999×10^{10}

 50,000
 0.00079
 69,990,000,000

Evaluate the expression. Write your answer in scientific notation.

23) $(7.5 \times 10^{-3}) + (5.8 \times 10^{-3})$ 24) $(4.6 \times 10^{6}) - (8.3 \times 10^{5})$ 25) $(1.1 \times 10^{8}) \times (1.4 \times 10^{7})$ 26) $(1.6 \times 10^{-4}) \div (8 \times 10^{3})$

- 27) A blue star has a temperature between 36,000°F and 90,000°F.
 - a. Write the temperature range using scientific notation.

3.6×104 to 9.0×104

b. Is a star with temperature 8.8×10^3 degrees Fahrenheit *warmer* or *cooler* than a blue star?

ZX 10-8

Cooler

1.54 ×1015

28) The diameter of a white dwarf is 1.0×10^{-1} times the diameter of our Sun. The Sun is 1.4×10^{6} kilometers wide. How wide is the white dwarf?

1.4× 105 km

29) Mercury is 3.6×10^6 miles from the Sun. Pluto is 3.6×10^9 miles from the Sun. How many times farther from the Sun is Pluto than Mercury?

1800 times

- 30) A gymnasium is 100 yards wide, 150 yards long, and 30 yards tall.
 - a. Write the dimensions in scientific notation.

1×10° yds by 1.5×10° yds by 3×10' yd

b. Find the volume of the building. Write your answer in scientific notation.

4.5×105 yd3

c. The cooling system is designed to cool a building up to 5.0×10^5 cubic yards. What size addition could be added to the gym without needing a new cooling system?

