

Q1 Cumulative Review

Student _____

Date _____

1. Which expression is equivalent to $(2^6 \cdot 2^2)^2$?
- A. 2^{16} $(2^{6+2})^2$
 B. 2^{24} $(2^8)^2$
 C. 4^{16} $2^{8 \cdot 2}$
 D. 4^{64} 2^{16}

2. Which of the following statements is correct?

- A. $3^{-1} = 3^{-3} \cdot 3^2 \rightarrow 3^{-3+2} = 3^{-1}$
 B. $3^{-3} = 3^{-1} \cdot 3^3$
 C. $3^4 = 3^{-2} \cdot 3^{-2}$
 D. $3^6 = 3^{-2} \cdot 3^2 \cdot 3^{-2}$

3. Which numerical expression is equivalent to $2^{-2} \times 2^{-3}$?

- A. $\frac{1}{64}$
 B. $\frac{1}{32}$ $2^{-2} \cdot 2^{-3} = 2^{-2+(-3)}$
 C. 32 $= 2^{-2-3}$
 D. 64 $= 2^{-5}$
 $= \frac{1}{2^5} = \frac{1}{32}$

4. Which value is equivalent to $\sqrt{5^2}$?

- A. 2.5
 B. $\sqrt{10}$
 C. 5 $\sqrt{5^2} = \sqrt{25} = 5$
 D. 25

5. Which of the following is equivalent to $\sqrt{196}$?

- A. $\sqrt{14}$
 B. $7\sqrt{2}$ $14 \cdot 14 = 196, \text{ so}$
 C. 14 $\sqrt{196} = 14$
 D. 98

6. What value of x makes the equation true?

- $x^3 = 27$ $3 \cdot 3 \cdot 3 = 27$
- A. 2
 B. 3 $x^3 = 27$
 C. 9 $\sqrt[3]{x^3} = \sqrt[3]{27}$
 D. 24 $x = 3$

7. Mike is about 1.6 meters tall. A rock is about 2.3×10^{-3} meters tall. About how many times shorter is the rock compared to Mike?

- A. 1,400
 B. 700 $\frac{1.6}{0.0023} = \frac{1.6}{.0023} \approx 700$
 C. 140
 D. 70

The average distance from Jupiter to the Sun is about 7.784×10^8 km. How should this distance be written in standard form?

- A. 778,400,000,000 km
 B. 7,784,000,000 km
 C. 778,400,000 km
 D. 77,840,000 km

7,784,000,000

9. The population of the United States is approximately 3×10^8 people. The population of Germany is approximately 8×10^7 people. Which statement about the populations of these countries is true?

- A. The population of Germany is almost 3 times the population of the United States.
- B. The population of Germany is almost 4 times the population of the United States.
- C. The population of the United States is almost 3 times the population of Germany.
- D.** The population of the United States is almost 4 times the population of Germany.

$$\frac{US \ 3 \times 10^8}{Ger. \ 8 \times 10^7}$$

$$\begin{aligned} &.375 \times 10^{8-7} \\ &.375 \times 10^1 \\ &\underline{.375} \\ &3.75 \end{aligned}$$

14. A student concluded that $8x - 12 = 4\left(\frac{1}{2}x - 6\right)$ has infinitely many solutions. Which statement best describes the student's conclusion?

- A. The conclusion is incorrect because the equation has no solution.
- B.** The conclusion is incorrect because there is exactly one solution to the equation.
- C. The conclusion is correct because there are exactly two solutions to the equation.
- D. The conclusion is correct because when simplified, both sides of the equation are equivalent.

* WORK @ the end

10. What is 7.31×10^{-2} in standard form?

$$0.731 = .0731$$

11. Which of the following is equivalent to 0.00000073?

- A. 7.3×10^7
- B. 7.3×10^6
- C. 7.3×10^{-6}
- D.** 7.3×10^{-7}

$$\begin{aligned} &0.00000073 \\ &\underline{7.3 \times 10^{-7}} \end{aligned}$$

12. Which equation has no solution?

- A. $3k - 20 = 12$
- B. $8 + 15g = 15 + 8g$
- C. $12x + 6 = 3(4x + 2)$
- D.** $9p + 7 = 6p - 2 + 3p$

$$\begin{aligned} &9p + 7 = 6p - 2 + 3p \\ &9p + 7 = 9p - 2 \\ &9p + 7 - 9p = 9p - 2 - 9p \\ &7 \neq -2 \end{aligned}$$

13. Which equation has an infinite number of solutions?

- A. $7(1 - 4x) + 3x = 7$
- B. $5(2 - 4x) + 4x = 10$
- C. $8(2 - 2x) + 16x = 9$
- D.** $6(3 - 2x) + 12x = 18$

$$\begin{aligned} &6(3 - 2x) + 12x = 18 \\ &6(3) + 6(-2x) + 12x = 18 \\ &18 - 12x + 12x = 18 \\ &18 - 0 = 18 \\ &18 = 18 \checkmark \end{aligned}$$

15. What is the value of x in the equation $3(x + 4) + 3 = 9$?

$$\begin{aligned} &3(x + 4) + 3 = 9 \\ &3(x) + 3(4) + 3 = 9 \\ &3x + 12 + 3 = 9 \\ &3x + 15 = 9 \\ &3x + 15 - 15 = 9 - 15 \\ &3x = -6 \\ &\frac{3x}{3} = \frac{-6}{3} \\ &x = -2 \end{aligned}$$

16. What is the solution to the equation $\frac{1}{2}(x + 5) = 10$?

$$\begin{aligned} &\frac{1}{2}(x + 5) = 10 \\ &\frac{1}{2}(x) + \frac{1}{2}(5) = 10 \\ &\frac{x}{2} + \frac{5}{2} = 10 \\ &2\left(\frac{x}{2} + \frac{5}{2}\right) = (10)2 \\ &x + 5 = 20 \\ &x + 5 - 5 = 20 - 5 \\ &x = 15 \end{aligned}$$

17. What is the value of w in the equation $6w + 36 = 2w$?

$$\begin{aligned} &6w + 36 = 2w \\ &6w + 36 - 2w = 2w - 2w \\ &4w + 36 = 0 \\ &4w + 36 - 36 = 0 - 36 \\ &4w = -36 \\ &\frac{4w}{4} = \frac{-36}{4} \\ &w = -9 \end{aligned}$$

18. Which fraction is equivalent to $0.0\overline{18}$?

A. $\frac{1}{55}$

B. $\frac{2}{111}$

C. $\frac{9}{500}$

D. $\frac{17}{900}$

$0.0\overline{18}$ Multiply by $\frac{10}{10}$

$0.0\overline{18} = \frac{18\overline{9}}{99\overline{9}} = \frac{2}{11}$

$\frac{2}{11} \div \frac{10}{1} = \frac{2}{110}$ Divide by 10

$\frac{2}{110} = \frac{2 \div 2}{110 \div 2} = \frac{1}{55}$

19. Which set of numbers contains only integers?

A. $\{-\frac{1}{4}, 0, -2\}$

B. $\{\sqrt{7}, \frac{1}{3}, -\frac{2}{5}\}$

C. $\{-3, 0, 2\}$

integers - whole #'s and their opposites

20. In which set(s) of numbers does π belong?

A. irrational only

B. rational only

C. rational and integer

D. rational, integer, and natural

21. Which statement about the location of $\sqrt{7}$ on a number line is true?

A. It is located at the number 7 on the number line.

B. It is located at the number 3.5 on the number line.

$\sqrt{4} < \sqrt{7} < \sqrt{9}$
 $\frac{2}{3} \quad \quad \quad \frac{3}{2}$

$\sqrt{7}$ is almost exactly halfway between $\sqrt{4}$ and $\sqrt{9}$

C. It is located between the numbers 2 and 3 on the number line.

D. It is located between the numbers 4 and 9 on the number line.

22. The formula used to determine the speed of a car before the brakes are applied is $s = \sqrt{20d}$, where s equals the speed of the car in miles per hour, and d equals the braking distance. The braking distance for a car was 60 feet. What was the *approximate* speed of the car before the brakes were applied?

A. 15 mph

B. 30 mph

C. 35 mph

D. 40 mph

$s = \sqrt{20d}$
 $= \sqrt{20(60)}$
 $= \sqrt{1200}$

$\frac{30}{\sqrt{900}} < \sqrt{1200} < \frac{40}{\sqrt{1600}}$

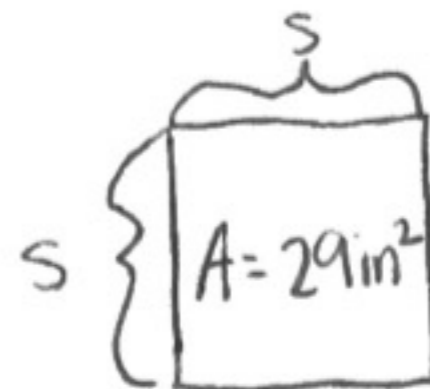
23. A square has an area of 29 square inches. Which choice below is the best estimate for the side length of the square?

A. More than 5 inches but less than 6 inches.

B. More than 7 inches but less than 8 inches.

C. More than 14 inches but less than 15 inches.

D. More than 25 inches but less than 36 inches.



$A = s^2$
 $\sqrt{29} = \sqrt{s^2}$

$\sqrt{25} < \sqrt{29} < \sqrt{36} = s$
 $= 5 \quad \quad \quad = 6$