

8

Incoming 8th Gr Summer Math Practice

Remember to show all of your work on a separate sheet(s)

Answers

Tell whether the two fractions form a proportion.

1. $\frac{3}{4}, \frac{16}{20}$

2. $\frac{5}{7}, \frac{30}{42}$

3. $\frac{4}{18}, \frac{6}{27}$

4. Use the ratio table to find the unit rate in dollars per ounce.

Amount (ounces)	12	16	20	24
Cost (dollars)	0.96	1.28	1.6	1.92

Order the numbers from least to greatest.

5. $|-5|, 6, -6, -|4|, -2$

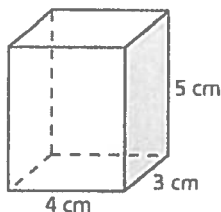
6. $\frac{15}{2}, -8.5, -\frac{42}{5}, 10.2$

Solve the inequality.

7. $4x < 24$

8. $x + 8 \geq 12$

9. What is the volume of the prism?



10. A map has a scale of 1 in. : 10 mi. On the map, the distance between two cities is 5 inches. What is the actual distance between the cities?

Simplify the expression.

11. $-4 + 11$

12. $-6 - 9$

13. $-7(-8)$

14. $60 \div (-4)$

15. $|-34|$

16. $| -(-41) |$

17. $17(-14)$

18. $12 - (-19)$

19. $\frac{4}{15} + \frac{5}{9}$

20. $-\frac{7}{8} \div \frac{3}{4}$

21. $\frac{13}{18} \cdot \frac{9}{25}$

22. $-\frac{7}{12} - \frac{1}{8}$

23. $(0.6)^2$

24. $8.37(-5.3)$

25. $0.95 - 3.49$

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

21. _____

22. _____

23. _____

24. _____

25. _____

8

(continued)

26. The length and the width of a rectangle are both doubled. What is the ratio of the area of the larger rectangle to the area of the smaller rectangle?

Answers

26. _____

Solve the equation.

27. $7 + x = -2$ 28. $8 - x = 13$ 29. $x - 11 = -5$

27. _____

30. $3x - 2 = -5$ 31. $8x + 5 = 21$ 32. $9 - 2x = 23$

28. _____

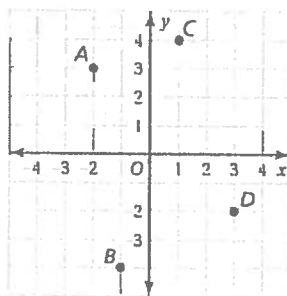
33. Use the properties of equality to show that the equation $6x + 3 = 27$ is equivalent to the equation $2x = 8$.

29. _____

Find the coordinates of the point.

34. *A* 35. *B*

36. *C* 37. *D*



30. _____

31. _____

32. _____

33. _____

34. _____

35. _____

36. _____

37. _____

Complete the statement using $<$, $>$, or $=$.

38. 1 in. _____ 2.54 cm 39. 40 in. _____ 1 m 40. 7 L _____ 2 gal

38. See left.

39. See left.

Write the fraction as a decimal.

41. $\frac{3}{4}$ 42. $\frac{5}{16}$ 43. $\frac{21}{4}$

40. See left.

41. _____

42. _____

44. In a class, the teacher asks each person wearing red to name his or her favorite color. Is this sample representative of the entire class? Explain.

43. _____

45. The data below are the test scores of the students in a math class.

97, 76, 84, 82, 90, 95, 77, 79, 80, 82, 84, 77, 100, 78, 87

Create a stem-and-leaf plot to represent the data.

44. _____

45. See left.

46. _____

46. Each of the letters in the word MATHEMATICS are written on separate index cards. The cards are then placed in a hat. What is the probability of randomly drawing an index card with a vowel on it from the hat?

Mathematics Reference Sheet

Conversions

U.S. Customary

1 foot = 12 inches
1 yard = 3 feet
1 mile = 5280 feet
1 acre \approx 43,560 square feet
1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 231 cubic inches
1 pound = 16 ounces
1 ton = 2000 pounds
1 cubic foot \approx 7.5 gallons

U.S. Customary to Metric

1 inch = 2.54 centimeters
1 foot \approx 0.3 meter
1 mile \approx 1.61 kilometers
1 quart \approx 0.95 liter
1 gallon \approx 3.79 liters
1 cup \approx 237 milliliters
1 pound \approx 0.45 kilogram
1 ounce \approx 28.3 grams
1 gallon \approx 3785 cubic centimeters

Time

1 minute = 60 seconds
1 hour = 60 minutes
1 hour = 3600 seconds
1 year = 52 weeks

Temperature

$$C = \frac{5}{9}(F - 32)$$

$$F = \frac{9}{5}C + 32$$

Metric

1 centimeter = 10 millimeters
1 meter = 100 centimeters
1 kilometer = 1000 meters
1 liter = 1000 milliliters
1 kiloliter = 1000 liters
1 milliliter = 1 cubic centimeter
1 liter = 1000 cubic centimeters
1 cubic millimeter = 0.001 milliliter
1 gram = 1000 milligrams
1 kilogram = 1000 grams

Metric to U.S. Customary

1 centimeter \approx 0.39 inch
1 meter \approx 3.28 feet
1 kilometer \approx 0.62 mile
1 liter \approx 1.06 quarts
1 liter \approx 0.26 gallon
1 kilogram \approx 2.2 pounds
1 gram \approx 0.035 ounce
1 cubic meter \approx 264 gallon

Number Properties

Commutative Properties of Addition and Multiplication

$$a + b = b + a$$

$$a \cdot b = b \cdot a$$

Associative Properties of Addition and Multiplication

$$(a + b) + c = a + (b + c)$$

$$(a \cdot b) \cdot c = a \cdot (b \cdot c)$$

Addition Property of Zero

$$a + 0 = a$$

Multiplication Properties of Zero and One

$$a \cdot 0 = 0$$

$$a \cdot 1 = a$$

Distributive Property:

$$a(b + c) = ab + ac$$

$$a(b - c) = ab - ac$$

Properties of Equality

Addition Property of Equality

$$\text{If } a = b, \text{ then } a + c = b + c.$$

Subtraction Property of Equality

$$\text{If } a = b, \text{ then } a - c = b - c.$$

Multiplication Property of Equality

$$\text{If } a = b, \text{ then } a \cdot c = b \cdot c.$$

Multiplicative Inverse Property

$$n \cdot \frac{1}{n} = \frac{1}{n} \cdot n = 1, n \neq 0$$

Division Property of Equality

$$\text{If } a = b, \text{ then } a \div c = b \div c, c \neq 0.$$

Squaring both sides of an equation

$$\text{If } a = b, \text{ then } a^2 = b^2.$$

Cubing both sides of an equation

$$\text{If } a = b, \text{ then } a^3 = b^3.$$

Properties of Exponents

Product of Powers Property: $a^m \cdot a^n = a^{m+n}$

Quotient of Powers Property: $\frac{a^m}{a^n} = a^{m-n}, a \neq 0$

Power of a Power Property: $(a^m)^n = a^{mn}$

Power of a Product Property: $(ab)^m = a^m b^m$

Zero Exponents: $a^0 = 1, a \neq 0$

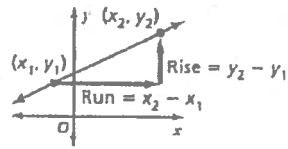
Negative Exponents: $a^{-n} = \frac{1}{a^n}, a \neq 0$

Slope

$$m = \frac{\text{rise}}{\text{run}}$$

$$= \frac{\text{change in } y}{\text{change in } x}$$

$$= \frac{y_2 - y_1}{x_2 - x_1}$$



Equations of Lines

Slope-intercept form

$$y = mx + b$$

Standard form

$$ax + by = c, a, b \neq 0$$

Point-slope form

$$y - y_1 = m(x - x_1)$$

Volume

Cylinder



$$V = Bh = \pi r^2 h$$

Cone



$$V = \frac{1}{3}Bh = \frac{1}{3}\pi r^2 h$$

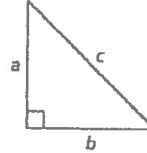
Sphere



$$V = \frac{4}{3}\pi r^3$$

Pythagorean Theorem

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

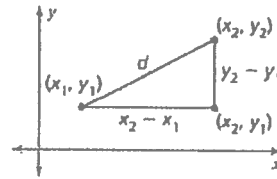


Converse of the Pythagorean Theorem

If the equation $a^2 + b^2 = c^2$ is true for the side lengths of a triangle, then the triangle is a right triangle.

Distance Formula

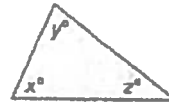
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



Angles of Polygons

Interior Angle Measures of a Triangle

$$x + y + z = 180$$



Interior Angle Measures of a Polygon

The sum S of the interior angle measures of a polygon with n sides is $S = (n - 2) \cdot 180^\circ$.

Exterior Angle Measures of a Polygon

$$w + x + y + z = 360$$

