

8th Grade Summer Math

Here are some helpful hints for success:

- ❖ It's ok to have parents or other adults help you.
- ❖ Find a quiet work space where you can get organized and stay focused.
- ❖ Pay close attention to the examples and vocabulary.
- ❖ Complete all the problems on each page.
- ❖ Do NOT use calculators. You need these skills for middle school, so you need to continue practicing.
- ❖ The packet should be returned to your math teacher on the first day of school.

Have a great summer and we will see you in August!

II. Fraction Practice

Simplify each of the following. Put your final answer in the form of a mixed number when appropriate. Put all fractional answers in reduced form.

1. $\frac{3}{4} + \frac{2}{3}$

2. $1\frac{3}{7} + 3\frac{3}{5}$

3. $2\frac{5}{9} - \frac{5}{6}$

4. $\frac{5}{8} - 1\frac{1}{2}$

5. $\frac{3}{8} \cdot \frac{4}{5}$

6. $2\frac{3}{4} \cdot 3\frac{1}{5}$

7. $\frac{4}{15} \div \frac{2}{5}$

8. $\frac{\frac{1}{3} - \frac{5}{6}}{\frac{3}{4}}$

9. $\frac{2}{\frac{2}{5} - 2\frac{4}{10}}$

10. $1\frac{1}{12} - 3\frac{2}{3} + 2\frac{5}{6}$

11. $\frac{\frac{2}{3} + 3\frac{3}{4}}{1\frac{1}{6} - 2}$

12. $\frac{3}{7} \left(\frac{2}{3} + 1\frac{1}{2} \right)$

III. Order of Operations

Simplify.

1. $4 + 6 \cdot 2 - 5 =$

2. $25 - 10 \div 2 =$

3. $3 + (5 - 2) + 6^2$

4. $\frac{4^2 - 20 \div 5}{1 - 5 + 7}$

5. $3[2 + 4(5 + 2^3)]$

6. $(3^2 - 4^2)^2$

Substitute and simplify.

7. $8x^2 + x - 9$ for $x = 2$

8. $14x - (2y + z)$ for $x = 3, y = 4, z = 5$

9. $\frac{21xy}{x + y}$ for $x = 3, y = 4$

10. $2y^2 - x - 1$ for $x = 2, y = 4$

11. $(2y)^2 - x - 1$ for $x = 2, y = 4$

12. $\frac{5(m - 2n)(m^2 + n^2)}{5m^2 - 2mn + n^2}$ for $m = 6, n = 3$

IV. Solving Equations

Solve each of the equations for the given variable.

1. $4x + 10 = 6x - 2$

2. $3(y - 2) = 10$

3. $4k + 3(k - 6) = 2k$

4. $\frac{1}{3}d + 8 = \frac{1}{6}d - 2$

5. $-4f + 25 = 5(f + 5)$

6. $23m + 5 - 7m = 4m - 19$

7. $3r - 5 + 5(r - 1) = 5r - 5$

8. $8w + 12 - 6w = 4(w + 3) - 2w$

9. $5p - 2(3p - 5) = -2(p - 4)$

10. $2n^2 + 7n - 5 = 2n^2 - 3n + 10$

11. $5h - 7 - 3h = 2(h + 14)$

12. $4v + 4 + v = -2(v + 6) + 9$

V. Rates, Ratios and Proportions

Calculate the unit rate.

1. 30 gallons in 5 minutes
2. 36 people for 3 tables
3. \$5.60 for 16 apples
4. 189 miles in 3.5 hours

Solve each proportion.

5. $\frac{2}{9} = \frac{10}{a}$

6. $\frac{12}{c} = \frac{8}{6}$

7. $\frac{-12x}{7} = \frac{30}{4}$

8. $\frac{y-3}{8} = \frac{3}{4}$

9. The ratio of apples to oranges in the basket was 5:7. If the basket had a total of 84 apples and oranges, how many apples were in the basket?
10. If Beth can walk two and a half miles in 28 minutes, how many minutes will it take her to walk 10 miles?
11. One day Bob kept track of how far he walked during the day. If he walked 6,000 feet in one day, how many miles would he walk in one week? (nearest hundredth of a mile)

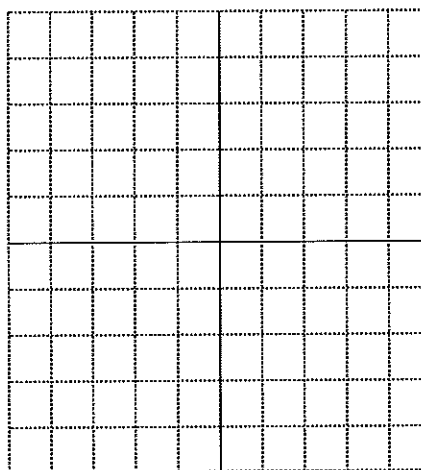
Convert each of the following.

12. 5 ft. = _____ yds.

13. 54 pints = _____ gallons

VI. Linear Equations

1. Find the slope of the line containing the points $(3, 7)$ and $(-4, 10)$.
2. Given the equation $y = 9x - 2$, state the slope and y-intercept.
3. Graph $y = \frac{1}{3}x - 2$



4. Find the equation of the line with a slope of $\frac{2}{5}$ and containing the point $(10, 6)$.
5. Find the equation of the line containing the points $(-3, -10)$ and $(12, 0)$.
6. Find the equation of the line that is perpendicular to the line $y = -8x + 17$ and contains the point $(24, 8)$.
7. Are the two lines below parallel, perpendicular or neither?

$$y = -\frac{2}{7}x + 4$$

$$21y + 6x = 63$$

VII. Statistics

1. Twelve students were given a math quiz and the times they took to complete it (in minutes) are listed below. Find the range of these times.

10, 9, 12, 11, 8, 15, 9, 7, 8, 6, 12, 10

2. A running race was completed by 7 students, and their race times are given below (in minutes). What is the median time?

13.2, 14.5, 17.9, 13.1, 15.6, 14.1, 12.3

3. Given below are the daily high temperatures (in degrees Fahrenheit) for one winter week in Chicago. What is the mode of these temperatures?

39, 42, 34, 37, 39, 44, 41

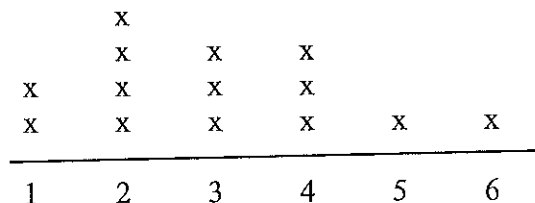
4. The average annual wind speed for the 5 windiest cities in the U.S. is given below in miles per hour. What is the mean of the annual wind speeds?

13.4, 14.0, 13.5, 13.2, 12.9

5. The number of tornadoes that have occurred in the U.S. in the last 8 years is listed below. Find the median number of tornadoes.

684, 764, 1133, 656, 702, 1303, 856, 1132

6. Students in a 4th grade class were asked how many baseball caps they owned. The results are given in the line plot below. What is the mode, median and mean number of caps.



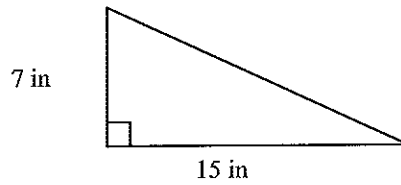
Number of baseball caps owned

7. Heather's test scores are 81, 93, 74, and 95. What is the score she must earn on the next test in order to get a mean of 85 on the five tests?

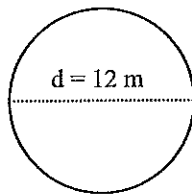
VII. Perimeter, Area, Surface Area and Volume

1. Find the area of a square that has a perimeter of 24 cm.

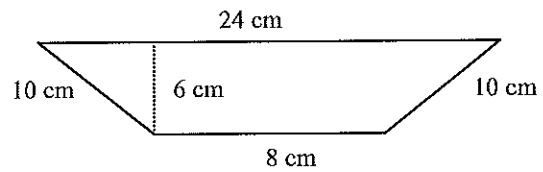
2. Find the area of the triangle.



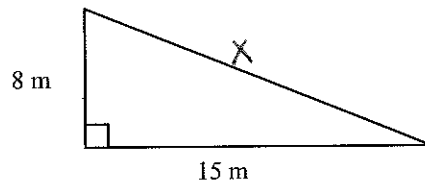
3. Find the area of the circle. (nearest hundredth)



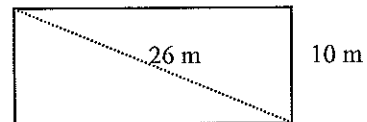
4. Find the area of the trapezoid.



5. Find x .

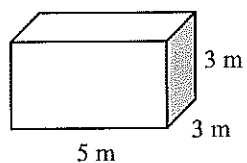


6. Given a rectangle with a side of 10 m and a diagonal of 26 m. Find the perimeter of the rectangle.

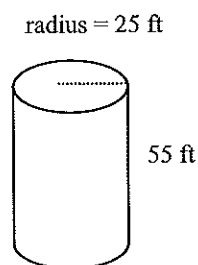


7. Find the volume and surface area of each of the following. (nearest hundredth)

a)



b)



c)

