

Review for Basic Math Skills Final Exam

In order to be prepared for the final exam, students should be able to do all of the following problems and related problems as well. Students are expected to know:

Perimeter and area formulas for triangles, rectangles, and squares

Simple interest

Mean, median, and mode for a set of numbers

Relationship between the radius and the diameter of a circle

Relationships in similar figures, including similar triangles

Relationships involving angles: complementary, supplementary, vertical

Relationships involving angles formed by parallel lines and a transversal

1. Round to the indicated place.

- a. 19,384 to the nearest hundred
- b. 264,980 to the nearest ten thousand
- c. 7834.0629 to the nearest thousandth
- d. 9.548 to the nearest tenth
- e. 0.395 to the nearest hundredth

2. Place the appropriate symbol $<$, $>$, or $=$ between the two numbers.

- | | |
|--------------------|---------------------|
| a. 18 81 | e. -0.07 -0.007 |
| b. 0 -50 | f. $ -6 $ $ 6 $ |
| c. -3 -5 | g. $ 3 $ $ -7 $ |
| d. 4.058 4.006 | |

3. Perform the indicated operations. Simplify your answer, if possible.

- | | |
|-----------------------------------|--|
| a. $\frac{17}{10} + \frac{17}{5}$ | d. $\frac{16}{27} + \frac{5}{12}$ |
| b. $\frac{5}{12} - \frac{7}{15}$ | e. $\frac{2}{35} \cdot \left(\frac{-5}{12}\right)$ |
| c. $8\frac{1}{6} - 4\frac{5}{9}$ | f. $\frac{3}{5} \div 12$ |

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

i. $\frac{(-4)^2 - 4(-6)}{2(-3 - 2)}$

h. $\left(\frac{3}{5}\right)^2 - \frac{2}{5} \div \frac{3}{4}$

4. For the numbers 42 and 60:

- Express each of the numbers as a product of prime factors.
- Find the LCM of the numbers.

5. Evaluate each of the following expressions. Simplify your answer, if possible.

a. $9\frac{2}{9} - x$ for $x = 6\frac{2}{3}$.

b. x^2 for $x = -7$

c. $-x^2$ for $x = 7$

d. $\frac{2x + y^2}{-7}$ for $x = -1$ and $y = -4$

6. Write in decimal notation.

Seven and one hundred twenty-eight thousandths

7. Translate the following sentence into mathematical symbols.

Three thousand six is greater than two hundred fifty-four

8. Perform the indicated operations.

a. $-6 - 3 + 8$

f. $-24 \div 6 \cdot 2$

b. $-9 - (-11)$

g. $7 \div 0$

c. $4 - 5 - (-1)$

h. $\frac{0}{12}$

d. $-3^2 + 4(-3)$

i. $35 - 15 \div (-5)(-3)^2 + 4$

e. $9 - 5(4 - 8)$

j. $(-5)^3 + 6(3 - 12 \div 3)$

9. Solve

a. $x - 45 = -13$

b. $-32x = 160$

c. $9x + (-5x) = 52$

d. $3x - 6 = -21$

e. $0.5x - 1.45 = 2.1$

f. $\frac{9}{x} = \frac{51}{34}$

10. Perform the indicated operations.

- a. $2.73 + 25 + 0.048$
- b. $-11.59 - (-3.6)$
- c. $-14 + 3.1 - 2.7 \times 0.3$
- d. $26 - 2.3(3 + 3.5 \div 1.25)$
- e. $(-0.4)^3$

11. Perform the indicated operations.

- a. $(-3a)(7a^3)$
- b. -5^2
- c. $\frac{24x^3y^8}{16x^5y}$
- d. $(4x)(-3x)(6x)$
- e. $(2y^2)(3y)(2x^2)(4x^4)$
- f. $(x^0)^{10}$
- g. $(y^3)^7$

12. Arrange in order from largest to smallest: $0.803, 80.3, 0.0803, 8.03$

13. Perform the indicated operations.

- a. $(9x - 3) + (4x + 15)$
- b. $(3a - 4b - 5) - (-4b + 9)$
- c. $(6x^2 - 2x + 7) - (x^2 - 3x)$

14. Multiply, using the distributive property.

- a. $-3x(2x - 5y + 1)$
- b. $(5y^5 - 3)(-2y^2)$
- c. $x^7(6x^5 - x^3 - 4x^2 + x - 8)$

15. Solve.

a. $3y - 5 = 7y - 2$

d. $4(x - 1) = -6(x + 2) + 48$

b. $3(2x + 8) - 7x = 30$

e. $14x = -2x + 16$

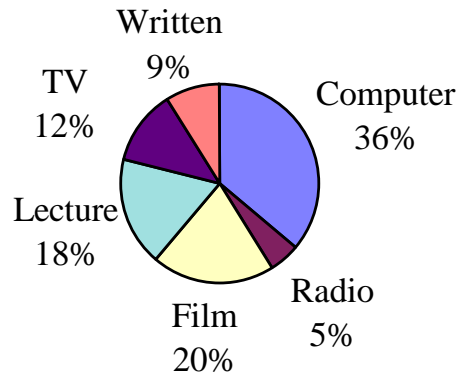
c. $-2y + \frac{1}{4} = \frac{2}{3}$

16. Complete the table below.

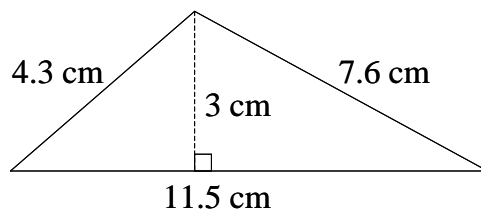
Fraction	Decimal	Percent
$\frac{8}{9}$		
	0.189	
		64.05%
$8\frac{3}{4}$		

17. A small apartment complex has 8 one-bedroom apartments. The monthly rents of these apartments are \$600, \$720, \$560, \$740, \$1120, \$580, \$740, and \$820. Find the mean, median, and mode.
18. Debbie had 2600 feet of ribbon to decorate carnival baskets. If she needed 24 feet of ribbon for each basket, how many baskets could she decorate and how much ribbon did she have left over?
19. The Pleasantville Country Club maintains the putting greens with a grass height of $\frac{7}{8}$ inch. The grass on the fairways is maintained at $2\frac{1}{2}$ inches. How much must the blade be lowered by a person mowing the fairways if that person will be using the same mowing machine on the putting green?
20. The temperature of a small lake in Michigan was 12°F at 8 pm. If the temperature of the lake dropped 5 degrees every hour for the next 3 hours and then dropped another two degrees the fourth hour, what was the temperature of the lake at midnight?
21. T. B. Etron's Company made \$782,535 last year. The expenses for that year were \$600,333. How much profit did the company make? If the 3 owners divided the profits equally, how much money did each owner receive?

For Problems 22-26, use the circle graph (pie chart) below. In a school of 1200 students, a survey of students indicated the following preferences for instructional methods.

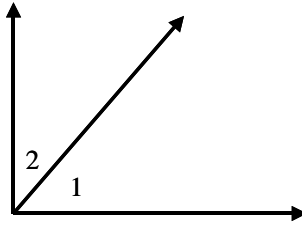


22. What percent of the students preferred either TV or film?
23. Which type of instructional method was least preferred by students?
24. Of the 1200 students, how many preferred lecture?
25. How many more of the 1200 students preferred film than preferred radio?
26. Find the area and perimeter of a square with each side $2\frac{3}{8}$ inches.
27. Find the area and perimeter of the triangle shown below.

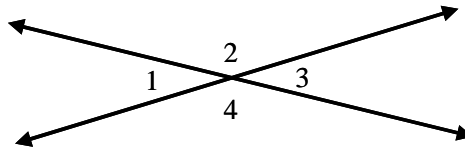


28. Find the area and circumference of a circle with a radius of 8 km. Use $\pi \approx 3.14$. Round your answer to the nearest tenth. $A = \pi r^2$ $C = 2\pi r$
29. Find the area and circumference of a circle with a diameter of 24 yd. Use $\pi \approx 3.14$. Round your answer to the nearest tenth. $A = \pi r^2$ $C = 2\pi r$
30. Find the volume of a rectangular solid with length = 13 feet, width = 7 feet, and height = 10 feet. $V = LWH$
31. Find the volume of a sphere with radius 5 m. Use $\pi \approx 3.14$. Round your answer to the nearest hundredth. $V = \frac{4\pi r^3}{3}$

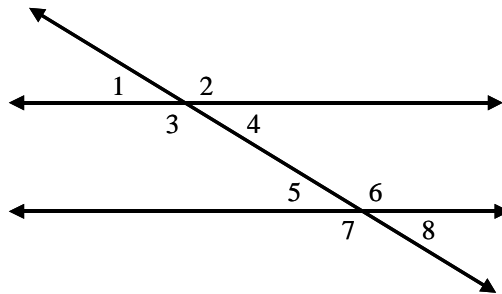
32. Angle 1 and angle 2 are complementary angles. If angle 1 measures 57.4° , find the measure of angle 2.



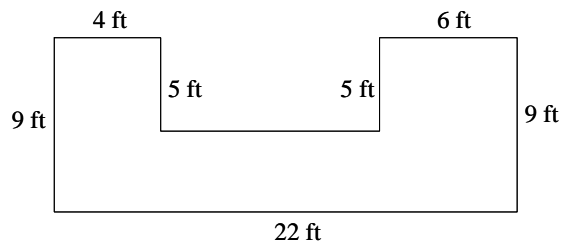
33. Find the measure of angles 1, 2, and 4 in the figure below, if the measure of angle 3 is 37.5° .



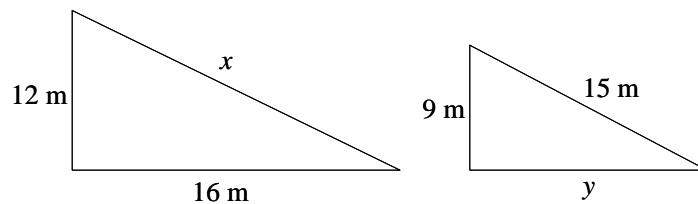
34. Find the measure of angles 1, 2, 3, 4, 5, 6, and 7 in the figure below, if the measure of angle 8 is 42° .



35. Find the area and perimeter of the shape below:



36. The triangles below are similar. Find the length of the sides marked x and y .



37. Pat bought 3 planters for \$12.98 each, 15 flowering plants at \$2 each, and 2 bags of potting soil at \$3.95 each. How much money did Pat spend for her purchases?

38. A stadium which had 4500 seats last year was remodeled. If the stadium has 27% more seats this year, how many seats does the remodeled stadium have?
39. Malik is paid 8% commission based on the dollar amount of sales he makes. If Malik earned \$1000 in commission, what were his total sales?
40. Marina buys a couch for \$835. If the sales tax rate is 7.5%, what is Marina's bill? Round your answer to the nearest cent.
41. Joaquin gets a loan for \$500 at an interest rate of 12%. How much interest does Joaquin pay if the loan is paid back in 6 months?
42. The tanning salon has a special on their tanning sessions: 12 sessions for \$102 or 15 sessions for \$135.
- Find each unit price.
 - Which is the better deal?
43. If $2\frac{1}{4}$ gallons of ice cream contains 360 grams of fat, how much fat is in $3\frac{1}{2}$ gallons of ice cream?
44. If the sum of eight and a number is multiplied by six, the result is 186.
- Write an equation.
 - Solve the equation.
45. If triple a number is decreased by four, the result is 47.
- Write an equation.
 - Solve the equation.
46. A triangle has a perimeter of 46 meters. The second side of the triangle is four meters longer than the first side. The third side is 10 meters shorter than two times the first side.
- Define the variable expressions.
 - Write an equation.
 - Solve the equation and find the length of each side of the triangle.
47. The perimeter of a rectangle is 212 inches. The length is 5 inches less than twice the width.
- Define the variable expressions.
 - Write an equation.
 - Solve the equation and find the dimensions of the rectangle.
48. The total flying time for two flights is 15 hours. The flight time of the first flight is half of the second.
- Define the variable expressions.
 - Write an equation.
 - Solve the equation and find the length of each flight.

ANSWERS:

- 1.
- 19,400
 - 260,000
 - 7834.063
 - 9.5
 - 0.40
- 2.
- $18 < 81$
 - $0 > -50$
 - $-3 > -5$
 - $4.058 > 4.006$
 - $-0.07 < -0.007$
 - $|-6| = |6|$
 - $|3| < |-7|$
- 3.
- $\frac{51}{10}$ or $5\frac{1}{10}$
 - $-\frac{1}{20}$
 - $3\frac{11}{18}$ or $\frac{65}{18}$
 - $\frac{109}{108}$ or $1\frac{1}{108}$
 - $\frac{-1}{42}$ or $-\frac{1}{42}$
 - $\frac{1}{20}$
 - $\frac{26}{17}$ or $1\frac{9}{17}$
 - $\frac{-13}{75}$ or $-\frac{13}{75}$
 - 4
- 4.
- $42=2 \times 3 \times 7$
 $60=2 \times 2 \times 3 \times 5$
 - 420
- 5.
- $2\frac{5}{9}$
 - 49
 - 49
 - 2
6. 7.128
7. $3006 > 254$
- 8.
- 1
 - 2
 - 0
 - 21
 - 29
 - 8
 - undefined
 - 0
 - 66
 - 131
- 9.
- $x = 32$
 - $x = -5$
 - $x = 13$
 - $x = -5$
 - $x = 7.1$
 - $x = 6$

- 10.
- 27.778
 - 7.99
 - 11.71
 - 12.66
 - 0.064
- 11.
- $-21a^4$
 - 25
 - $\frac{3y^7}{2x^2}$
 - $-72x^3$
 - $48x^6y^3$
 - 1
 - y^{21}
12. 80.3, 8.03, 0.803, 0.0803
- 13.
- $13x + 12$
 - $3a - 14$
 - $5x^2 + x + 7$
- 14.
- $-6x^2 + 15xy - 3x$
 - $-10y^7 + 6y^2$
 - $6x^{12} - x^{10} - 4x^9 + x^8 - 8x^7$
- 15.
- $y = \frac{-3}{4}$ or $y = -\frac{3}{4}$
 - $x = -6$
 - $y = \frac{-5}{24}$ or $y = -\frac{5}{24}$

- $x = 4$
- $x = 1$

16.

Frac.	Dec.	Per.
$\frac{8}{9}$	0.8889	88.89%
$\frac{189}{1000}$	0.189	18.9%
$\frac{1281}{2000}$	0.6405	64.05%
$8\frac{3}{4}$	8.75	875%

17.

Mean: \$735

Median: \$730

Mode: \$740

18. 108 baskets with 8 feet left

19. $1\frac{5}{8}$ inch20. -5°F

21. \$182,202; \$60,734

22. 32%

23. Radio

24. 216 Students

25. 180 Students

26. Area: $\frac{361}{64}$ in² or $5\frac{41}{64}$ in²Perimeter: $\frac{19}{2}$ in or $9\frac{1}{2}$ in27. Area: 17.25cm^2 Perimeter: 23.4cm

28. Area: 201.0 km^2
Circumference: 50.2 km
29. Area: 452.2 yd^2
Circumference: 75.4 yd
30. Volume: 910 ft^3
31. Volume: 523.33 m^3
32. $m\angle_2 = 32.6^\circ$
 $m\angle_1 = 37.5^\circ$
33. $m\angle_2 = m\angle_4 = 142.5^\circ$
 $m\angle_1 = m\angle_4 = m\angle_5 = 42^\circ$
34. $m\angle_2 = m\angle_3 = m\angle_6 = m\angle_7 = 138^\circ$
35. Area: 138 ft^2
Perimeter: 72 ft
36. $x = 20 \text{ m}$ and $y = 12 \text{ m}$
37. \$76.84
38. 5715 Seats
39. \$12,500
40. \$897.63
41. \$30
- 42.
- \$8.50 per session
\$9 per session
 - 12 sessions for \$102
43. 560 g of fat
- 44.
- $6(8 + n) = 186$
 - $n = 23$
- 45.
- $3n - 4 = 47$
 - $n = 17$
- 46.
- $n =$ length of first side
 $n + 4 =$ length of second side
 $2n - 10 =$ length of third side
 - $n + (n + 4) + (2n - 10) = 46$
 - $n = 13$ meters
(length of first side)
 $n + 4 = 17$ meters
(length of second side)
 $2n - 10 = 16$ meters
(length of third side)
- 47.
- $n =$ width
 $2n - 5 =$ length
 - $2n + 2(2n - 5) = 212$
 - $n = 37$ inches (width)
 $2n - 5 = 69$ inches (length)
- 48.
- $n =$ length of one flight
 $\frac{1}{2}n =$ length of other flight
 - $n + \frac{1}{2}n = 15$
 - $n = 10$ hours
(length of one flight)
 $\frac{1}{2}n = 5$ hours
(length of other flight)