

First Semester Exam

Evaluate.

_____ 1. $|37 - 63|$

_____ 2. $-21 + 4 + |-17 + 23|$

_____ 3. $(-12)(3) \div 3(-2)$

_____ 4. $(-2)^3 \div (-2)^2$

_____ 5. $(-4 + 6)^3 - 5^0 + 7 \times 2^2$

_____ 6. $2\frac{3}{8} + 4\frac{7}{9}$

_____ 7. $(-3\frac{1}{5})(-4\frac{1}{6})$

_____ 8. $1.68 - 17.3 + 3.14$

_____ 9. $\frac{5}{4} \div \frac{6}{7} \times \frac{2}{3}$

_____ 10. $a - ac + bc^2$, when
 $a = -1$, $b = 2$, and $c = -3$

_____ 11. $\frac{a}{b} - c$, when $a = 2$, $b = 3$,
and $c = \frac{3}{5}$

_____ 12. $t^2 - v^2$, when $t = 0.1$ and
 $v = 0.01$

_____ 13. $(-8.2 \times 10^4) \times (2.5 \times 10^6)$

Simplify.

_____ 14. $a^4(a^3)^2$

_____ 15. $3xy + 2x - 3y + 4xy - 5x$

_____ 16. $\frac{3}{7}\left(\frac{4}{9} + \frac{1}{2}y\right) - \frac{1}{3}y$

Solve.

_____ 17. $x - \frac{1}{2} = \frac{3}{5}$

_____ 18. $-4x + 3 = 19$

_____ 19. $-3x > 15$

_____ 20. $1.3y + 2.53 = 2.634$

Multiple Choice.

- _____ 21. Which of the following is a prime number?
a. 29 b. 39 c. 49 d. 69 e. 99
- _____ 22. If $600 = 2^x \cdot 3^y \cdot 5^z \cdot 7^w$, then x must be ____.
a. 0 b. 1 c. 2 d. 3 e. 4
- _____ 23. Numbers that can be expressed as a fraction of integers are called
a. natural. b. proper. c. integers.
d. rational. e. irrational.
- _____ 24. The number -5 can be classified as which of the following? List all that apply.
a. Natural b. Whole c. Integer
d. Rational e. Irrational f. Real
- _____ 25. Which of the following equations *could not* be used to solve the problem?
Find two numbers whose sum is 24 if the second number is three times the first.
a. $x + 3(24 - x) = 24$ b. $x + 3x = 24$
c. $(24 - x) = 3x$ d. $x = 3(24 - x)$

Short Answer.

- _____ 26. What is the greatest common factor of 24 and 42?
- _____ 27. What is the LCM of $14x^3y^7z$ and $35wx^6y^2z^5$?

- _____ 28. Identify the following sequence as arithmetic or geometric and write a recursive formula for the sequence.
8, -4, 2, -1, ...
- _____ 29. Identify the following sequence as arithmetic or geometric and write a simplified explicit formula for the sequence.
1, 4, 7, 10, ...
- _____ 30. Convert the following to base 10: $3A_{12}$.
- _____ 31. Write an inequality that orders the following numbers from least to greatest:
 $1\frac{1}{5}$, $\frac{4}{3}$, $-\frac{3}{5}$, and $\frac{1}{4}$.
- _____ 32. State the decimal equivalent of $3\frac{10}{33}$.
- _____ 33. Drew's team finished the season with 10 wins, 4 losses, and 2 ties. Express the ratio of losses to wins as a fraction in lowest terms.
- _____ 34. State in lowest terms a fraction that is equivalent to 12.5%.
- _____ 35. 30% of what number is 75?

Match the property that justifies each of the following statements.

- a. Associative Property of Addition
- b. Associative Property of Multiplication
- c. Commutative Property of Addition
- d. Commutative Property of Multiplication
- e. Additive Inverse
- f. Multiplicative Inverse
- g. Distributive Property

_____ 36. $2y - 7 = -7 + 2y$

_____ 37. $2(3x + 4) = 6x + 8$

_____ 38. The reciprocal of 2 is 0.5.

Short answer.

_____ 39. Estimate how long it takes for a commercial airliner averaging 525 mph to complete the 2,475 mi. trip from New York to Los Angeles.

_____ 40. At noon, the temperature was 72°F. A cold front caused the temperature to drop 3°F each hour for the next 5 hr. What was the temperature at 5:00?

_____ 41. If it takes Frank 3 hr. to assemble 7 bikes, how long will it take him to assemble the 35 bikes needed for the Christmas sale?

Write an equation or an inequality and solve.

_____ 42. What was the total bill for the doctor's visit if insurance covered four-fifths of the bill and Jon still had to pay \$45 out of pocket?

_____ 43. The number of pizza meals sold by the concession stand was 3 times the number of hot dog meals. If the pizza meal cost \$4, and the hot dog meal cost \$2, and the total revenue from the meals was \$658, how many of each meal were sold?

_____ 44. If there are 4 more girls than boys in a class of 36 students, how many boys are in the class?

_____ 45. A consumer electronics store sold 35 computers during its Super Sale, leaving less than 12 in its inventory at the end of the day. How many computers did it have before the Super Sale?

Short answer.

_____ 46. A 1 : 32 scale model kit of a WWII fighter airplane, the Spitfire Mk. I, has a 16.5 in. wingspan. How many feet wide is the wingspan of the real plane?

_____ 47. What is the markup rate on a tie that costs the store \$16 and regularly sells for \$28?

Name _____

- _____ 48. What is the 3% commission on a house sale of \$225,000?
- _____ 49. How much simple interest is earned on \$1,000 invested for 2 years at a rate of 9%?
- _____ 50. Stephanie received a \$0.75/hr. increase. She is now paid \$9.75/hr. What percent increase of her hourly wage does this represent?

Chapters 8–14

Second Semester Exam

Multiple Choice.

_____ 1. Which points lie on the same horizontal line as $(3, 2)$? List all that apply.
 a. $(3, 5)$ b. $(5, 2)$ c. $(-3, -2)$ d. $(-3, 2)$ e. $(3, -2)$

_____ 2. What are the slope and y -intercept of $4x + 3y = 12$?
 a. slope: -3 ; y -intercept: $(0, 4)$ b. slope: -4 ; y -intercept: $(0, 3)$
 c. slope: $-\frac{4}{3}$; y -intercept: $(0, 4)$ d. slope: $-\frac{3}{4}$; y -intercept: $(0, 3)$

_____ 3. During a presidential campaign, one thousand registered voters are asked for whom they would likely vote. The thousand registered voters are an example of a
 a. statistic. b. parameter. c. population. d. sample.

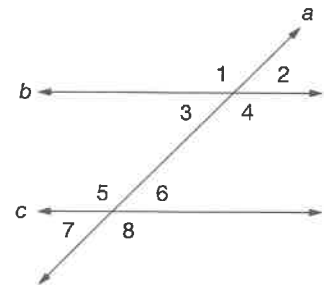
_____ 4. When drawing a pie chart to represent the following results of a survey regarding students' favorite lunch items, which size slice should be used to represent pizza?
 a. 10° d. 144°
 b. 20° e. 180°
 c. 40°

Entrée	Students
Pizza	20
Subs	10
Tacos	5
Cheeseburgers	10
Salad Bar	5

_____ 5. What is the probability that a student randomly chosen from the survey above prefers a cheeseburger as his favorite lunch item?
 a. 5% b. 10% c. 20% d. 40% e. 72%

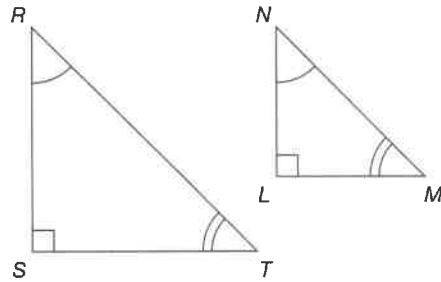
_____ 6. A 135° angle is classified as
 a. acute. b. complementary.
 c. obtuse. d. right.
 e. supplementary.

_____ 7. In the diagram, $\angle 3$ and $\angle 6$ can be classified as which type of angles?
 a. alternate exterior b. alternate interior
 c. corresponding d. complementary
 e. supplementary



_____ 8. Given the diagram, which of the following is true?

- a. $\triangle RST \sim \triangle LMN$
- b. $\frac{RS}{NL} = \frac{RT}{NM}$
- c. $\angle R \cong \angle M$
- d. $\overline{RT} \cong \overline{NM}$
- e. None of these is true.



_____ 9. Which has greater area, a circular pizza with a 6 in. diameter or a square pizza that is 5 in. on each side?

- a. The circular pizza.
- b. The square pizza.
- c. They are the same.
- d. It cannot be determined from the given information.

_____ 10. If the ratio of the sides of two similar triangles is 4 : 9, what is the ratio of their areas?

- a. 2 : 3
- b. 2 : 4.5
- c. 4 : 9
- d. 8 : 18
- e. 16 : 81

_____ 11. What is the most specific name for the expression $2x^3 - 2x$?

- a. monomial
- b. binomial
- c. trinomial
- d. polynomial
- e. algebraic expression

Solve.

_____ 12. $7(x + 3) - 3(4x + 9) = 14$

_____ 13. $3g + 5 = 8g - 5$

_____ 14. $\sqrt{-4x} = 9$

_____ 15. $\frac{x^2}{9} - 2 = 2$

Simplify.

_____ 16. $\sqrt{6} \cdot \sqrt{10}$

_____ 17. $2\sqrt{48} - 6\sqrt{27} + 5\sqrt{8}$

_____ 18. $(5x^2 - 5x - 3) + (7x + 5 - 7x^2)$

_____ 19. $(5x^2 + 4x - 1) - (x^2 - 4)$

_____ 20. $(-8x^3y^4)(8x^2y^2)$

_____ 21. $(4x + 5)(3x - 2)$

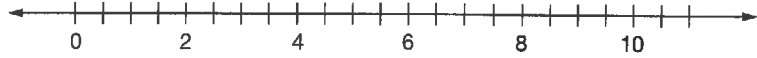
_____ 22. $\frac{-72x^5y^3}{4x^3y}$

Short Answer.

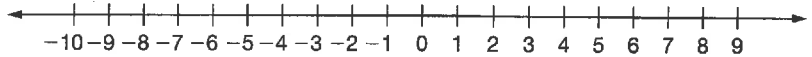
- _____ 23. Give the range of the relation C defined by $y = 2x - 1$ with domain $D = \{0, 3, 5\}$.
- _____ 24. If $f(x) = \frac{x+3}{x-2}$, find $f(3)$.
- _____ 25. Find the slope of a line passing through $(2, -3)$ and $(5, 1)$.
- _____ 26. Find the length of the segment having endpoints at $(2, -3)$ and $(5, 1)$.
- _____ 27. State the coordinates of the point that is the image of a reflection of the point $(4, 5)$ through the line $y = 3$.
- _____ 28. If y varies directly with x and $y = 6$ when $x = 2$, find y when $x = 6$.
- _____ 29. $\sqrt[3]{75}$ falls between which two integers?
- _____ 30. Find the mean and mode of Janette's quiz scores: 6, 8, 9, 9, 9, and 7.

Graph.

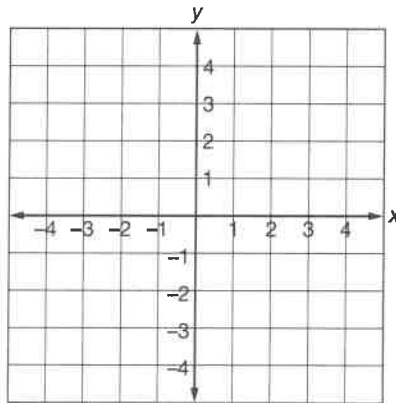
31. Draw a box-and-whisker diagram of Janette's quiz scores:
6, 8, 9, 9, 9, and 7.



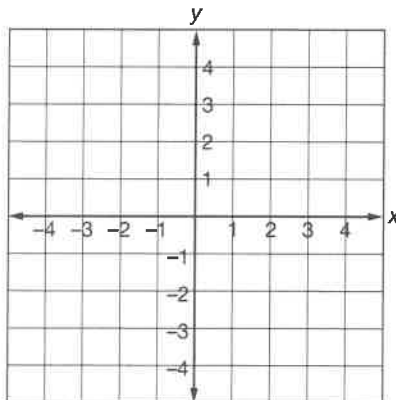
32. Solve and graph: $8 - 3x < -7$.



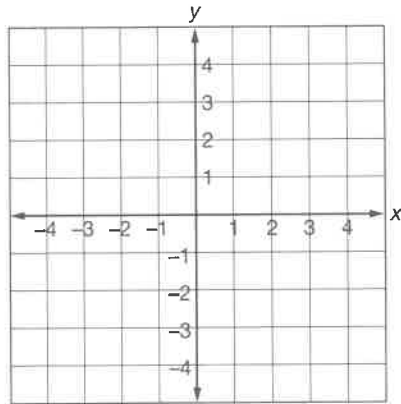
33. Graph $y = -\frac{1}{3}x + 2$.



34. Graph $3x - 2y = 6$.

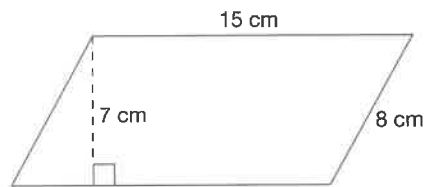


35. Graph $y \leq x - 1$.

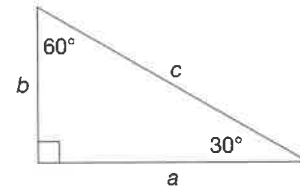


Solve.

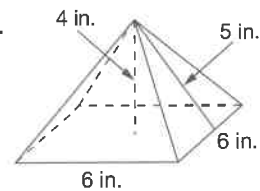
_____ 36. Calculate the area of the figure.



_____ 37. If $c = 10$, find the values of a and b .



_____ 38. Determine the volume of the square pyramid.



_____ 39. Determine the surface area of the square pyramid in the previous problem.

_____ 40. How many different three-member committees can be selected from a group of 25 individuals?

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- _____ 41. How many different ways can three different positions be filled from 25 qualified applicants?
- _____ 42. Determine the sum of the measures of the interior angles of any pentagon.
- _____ 43. Find the other leg of a right triangle if one leg is 15 in. and the hypotenuse is 17 in.
- _____ 44. A trapezoid that is 9 in. tall has an area of 126 in.^2 . If one of the bases is 12 in. long, determine the length of the other base.
- _____ 45. Determine the surface area of a can having a diameter of 6 cm and a height of 12 cm.
- _____ 46. Determine the radius of a circular cylinder having a volume of $192\pi \text{ in.}^3$ and a height of 12 in.

_____ 47. Determine the volume, to the nearest cubic foot, of a spherical water tank having a radius of 3 ft.

_____ 48. Find three consecutive odd integers such that three times the largest exceeds the sum of the first two by three.

_____ 49. The Dybas family budgeted \$700 to remodel the family room. The contractor charged \$250 each to replace 2 windows. What is the most they can spend per door to replace the 3 doors in the room and stay within their budget?

_____ 50. Brad has four less than twice as many dimes as nickels and half as many quarters as dimes. Determine the number of each type of coin if the total value of the nickels, dimes, and quarters is \$3.10.

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