

NAME: \_\_\_\_\_

SHOW ALL WORK , NO WORK = NO CREDIT

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate the algebraic expression for the given value or values of the variable.

1)  $(x + 2y)^2$ ;  $x = 3$ ,  $y = 2$

A) 7

B) 49

C) 14

D) 25

1) \_\_\_\_\_

Find the indicated term for the geometric sequence with first term,  $a_1$ , and common ratio,  $r$ .

2) Find  $a_6$ , when  $a_1 = 18$ ,  $r = \frac{1}{2}$ .

A)  $\frac{41}{2}$ B)  $\frac{9}{16}$ 

C) 21

D)  $\frac{9}{32}$ 

2) \_\_\_\_\_

Add in the indicated base.

3)  $10111_{\text{two}} + 11110_{\text{two}} + 10110_{\text{two}}$

A)  $1101011_{\text{two}}$ B)  $101011_{\text{two}}$ C)  $1001011_{\text{two}}$ D)  $1011011_{\text{two}}$ 

3) \_\_\_\_\_

Solve the system by the addition method. Be sure to check all proposed solutions.

$$\begin{aligned} 4) \quad & x - 3y = -15 \\ & -4x - 3y = 0 \end{aligned}$$

4) \_\_\_\_\_

A)  $\{(-3, 4)\}$

B)  $\{(-4, -3)\}$

C)  $\{(-2, 3)\}$

D)  $\emptyset$

If  $n$  is a natural number, then  $10^{-n} = \frac{1}{10^n}$ . Negative powers of 10 can be used to write the decimal part of Hindu-Arabic numerals in expanded form. Express the expanded form as a Hindu-Arabic numeral.

$$5) (4 \times 10^3) + (2 \times 10^2) + (3 \times 10^1) + (9 \times 1) + (9 \times 10^{-1}) + (4 \times 10^{-2}) + (9 \times 10^{-3})$$

5) \_\_\_\_\_

A) 42399.49

B) 4,239,949

C) 423.9949

D) 4239.949

Solve the quadratic equation by factoring.

$$6) x^2 - 49 = 48x$$

6) \_\_\_\_\_

A)  $\{-7, -7\}$

B)  $\{-7, 7\}$

C)  $\{1, -49\}$

D)  $\{-1, 49\}$

Find the indicated term for the arithmetic sequence with first term,  $a_1$ , and common difference,  $d$ .

$$7) \text{ Find } a_{100}, \text{ where } a_1 = -80 \text{ and } d = 5.$$

7) \_\_\_\_\_

A) 420

B) 425

C) 415

D) 575

The principle represents an amount of money deposited in a savings account subject to compound interest at the rate shown. Use the formula

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

to find how much money will be in the account after the given number of years and how much interest was earned in that period.

- 8) principal: \$8500 8) \_\_\_\_\_  
rate: 4%  
compounding periods per year: 4  
time: 5 years
- A) amount in account: \$12,582.08; interest earned: \$4082.08  
B) amount in account: \$10,371.62; interest earned: \$1871.62  
C) amount in account: \$18,624.55; interest earned: \$10,124.55  
D) amount in account: \$8933.59; interest earned: \$433.59

Solve the problem.

- 9) Suppose that the luxury sales tax rate in a foreign country is 15%. A very wealthy socialite bought a diamond tiara for \$151,000. How much tax does she pay? 9) \_\_\_\_\_
- A) \$22,650                      B) \$10,067                      C) \$227                      D) \$2265

- 10) A dress regularly sells for \$105. The sale price is \$84. Find the percent decrease of the sale price from the regular price. 10) \_\_\_\_\_
- A) 25%                      B) 20%                      C) 80%                      D) 400%

Convert the numeral to a numeral in base ten.

11)  $3095_{\text{sixteen}}$

11) \_\_\_\_\_

A) 197

B) 6320

C) 49,520

D) 12,437

Calculate the slope of the line passing through the given points. If the slope is undefined, so state. Then indicate whether the line rises, falls, is horizontal, or is vertical.

12)  $(-9, 8), (15, -1)$

12) \_\_\_\_\_

A)  $\frac{3}{8}$ , rises

B)  $-\frac{3}{8}$ , falls

C)  $-\frac{8}{3}$ , falls

D)  $\frac{7}{6}$ , rises

Use a proportion to solve the problem about direct variation.

13) The shadow cast by an object on a sunny day varies directly as the height of the object. If a person 58 inches tall casts a shadow 63 inches long, how tall is a tree which casts a shadow 48 feet in length?

13) \_\_\_\_\_

A) 60.5 ft

B) 52.14 ft

C) 76.13 ft

D) 44.19 ft

Use FOIL to find the product.

14)  $(3x - 4)(x - 7)$

A)  $3x^2 + 40x + 28$

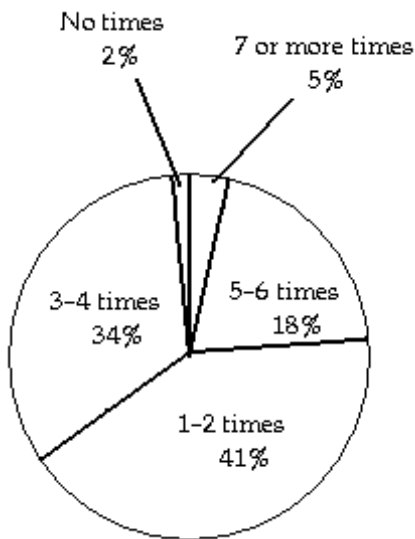
B)  $x^2 - 25x + 40$

C)  $3x^2 - 25x + 28$

D)  $x^2 + 28x - 25$

14) \_\_\_\_\_

The circle graph shows the number of times a group of survey respondents watched the news in the past week. Use the chart to answer the question.



15) If the number of respondents in the study was approximately 47,000, how many stated that they watched the news 5-6 times in the last week?

A) 8460 respondents

B) 846 respondents

C) 1598 respondents

D) 15,980 respondents

15) \_\_\_\_\_

Solve the problem. Round answers to the nearest dollar.

- 16) The cost of a boat is \$34,000. Arthur finances this by paying \$5000 down and \$998.89 per month for 36 months. Determine a. the amount financed; b. the total installment price; c. the finance charge. 16) \_\_\_\_\_
- A) a. amount financed: \$29,000; b. total installment price: \$40,090; c. finance charge: \$6090  
B) a. amount financed: \$34,000; b. total installment price: \$41,060; c. finance charge: \$7060  
C) a. amount financed: \$29,000; b. total installment price: \$40,960; c. finance charge: \$11,960  
D) a. amount financed: \$29,000; b. total installment price: \$40,960; c. finance charge: \$6960

Use a proportion to solve the problem about inverse variation.

- 17) The time it takes to complete a certain job varies inversely as the number of people working on that job. If it takes 32 hours for 11 carpenters to frame a house, then how long will it take 56 carpenters to do the same job? 17) \_\_\_\_\_
- A) 56 hr                      B) 6.3 hr                      C) 19.3 hr                      D) 40 hr

Multiply in the indicated base.

- 18) 
$$\begin{array}{r} 432_{\text{nine}} \\ \times 7_{\text{nine}} \\ \hline \end{array}$$
 18) \_\_\_\_\_
- A)  $3435_{\text{nine}}$                       B)  $3345_{\text{nine}}$                       C)  $3445_{\text{nine}}$                       D)  $3343_{\text{nine}}$

Use the table to calculate the income tax owed.

2005 MARGINAL TAX RATES, STANDARD DEDUCTIONS, AND EXEMPTIONS				
	Unmarried, divorced, or legally separated	Married and each partner files a separate tax return	Married and both partners file a single tax return	Unmarried and paying more than half the cost of supporting a child or parent
Tax Rate	Single	Married Filing Separately	Married Filing Jointly	Head of Household
10%	up to \$7300	up to \$7300	up to \$14,600	up to \$10,450
15%	\$7301 to \$29,700	\$7301 to \$29,700	\$14,601 to \$59,400	\$10,451 to \$39,800
25%	\$29,701 to \$71,950	\$29,701 to \$59,975	\$59,401 to \$119,950	\$39,801 to \$102,800
28%	\$71,951 to \$150,150	\$59,976 to \$91,400	\$119,951 to \$182,800	\$102,801 to \$166,450
33%	\$150,151 to \$326,450	\$91,401 to \$163,225	\$182,801 to \$326,450	\$166,451 to \$326,450
35%	more than \$326,450	more than \$163,225	more than \$326,450	more than \$326,450
Standard Deduction	\$5000	\$5000	\$10,000	\$7300
Exemptions (per person)	\$3200	\$3200	\$3200	\$3200

19) Married couple filing jointly with two dependent children

Gross Income: \$94,000

Adjustments: None

Deductions:

\$12,000 mortgage interest

\$5000 charitable contributions

\$2500 student loan interest

Tax credit: \$2000

A) \$8755

B) \$6755

C) \$13,425

D) \$15,425

19) \_\_\_\_\_

The principal  $P$  is borrowed at simple interest rate  $r$  for a period of time  $t$ . Find the simple interest owed for the use of the money. Assume 360 days in a year and round answer to the nearest cent.

20)  $P = \$500.00$   
 $r = 8\%$   
 $t = 3$  months

20) \_\_\_\_\_

A) \$10.00

B) \$510.00

C) \$120.00

D) \$620.00

The principal  $P$  is borrowed at simple interest rate  $r$  for a period of time  $t$ . Find the loan's future value,  $A$ , or the total amount due at time  $t$ . Round answer to the nearest cent.

21)  $P = \$14,000.00$   
 $r = 11\%$   
 $t = 90$  days

21) \_\_\_\_\_

A) \$14,385.00

B) \$14,398.00

C) \$14,379.73

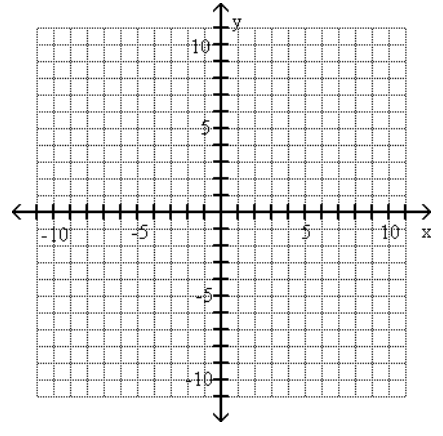
D) \$152,605.00

Graph the system of inequalities.

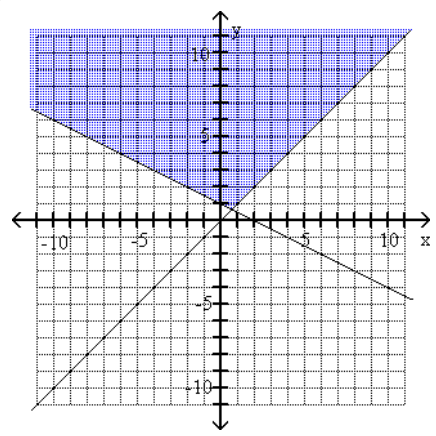


22)  $x - 2y \leq 2$   
 $x + y \leq 0$

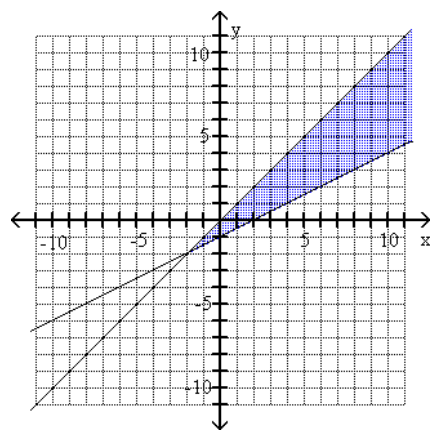
22) \_\_\_\_\_



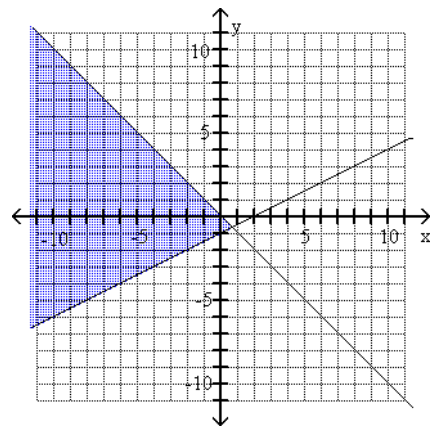
A)



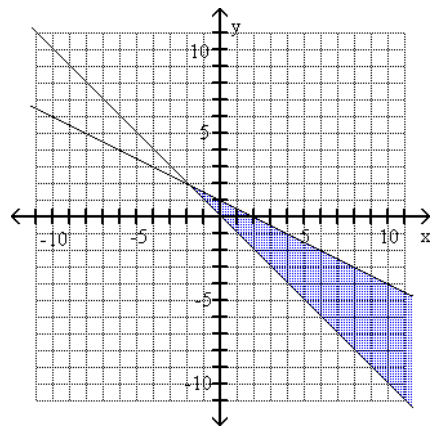
B)



C)



D)



Simplify the algebraic expression.

23)  $[-6x^2 - (-6x^2 + 2)] + [(4x^2 + (-10 - 5x^2)) - 5x^2]$

A)  $-4x^2 + 8$

B)  $6x^2 + 8$

C)  $-6x^2 - 12$

D)  $-8x^2 + 12$

23) \_\_\_\_\_

24)  $-6[9x^2 + 2(5 - x)]$

A)  $-54x^2 - 2x + 10$

C)  $-54x^2 + 12x - 60$

B)  $-54x^2 + 6x - 60$

D)  $-54x^2 - 12x - 60$

24) \_\_\_\_\_

Subtract in the indicated base.

25)

$$\begin{array}{r} 721_{\text{nine}} \\ - 473_{\text{nine}} \\ \hline \end{array}$$

A)  $227_{\text{nine}}$

B)  $327_{\text{nine}}$

C)  $237_{\text{nine}}$

D)  $238_{\text{nine}}$

25) \_\_\_\_\_