

HOUSTON COMMUNITY COLLEGE SYSTEM

Math 0309  
Final Review

**Name the set using the roster method.**

- 1) The set of whole numbers 2 through 5

**Find the intersection.**

- 2)  $\{b, c, d, e, f\} \cap \{g, h, i, j, k\}$

**Find the union.**

- 3)  $\{3, 5, 7, 13\} \cup \{0, 3, 8, 13\}$

- 4) Find  $C' \cup A'$

Let  $U = \{q, r, s, t, u, v, w, x, y, z\}$

$A = \{q, s, u, w, y\}$

$B = \{q, s, y, z\}$

$C = \{v, w, x, y, z\}$ .

**Convert the symbolic compound statement into words.**

- 5) p represents the statement "It's raining in Chicago."

q represents the statement "It's windy in Boston."

Translate the following compound statement into words:

$$p \vee q$$

**Let p represent a true statement and let q represent a false statement. Find the truth value of the given compound statement.**

- 6)  $p \vee \sim q$

**Construct a truth table for the statement.**

- 7)  $(t \wedge s) \vee (\sim t \wedge \sim s)$

**Simplify.**

- 8)  $-18 + (-9) + (-14) + (-5) + 1 + (-9)$

- 9)  $[5(x - 4) - 7] + [9(x - 1) + 9]$

- 10)  $\sqrt{400}$

**Evaluate the expression for the given value of x.**

- 11)  $-4x^3$ ,  $x = -1$

**Divide.**

$$12) \frac{1}{3} \div \left(-\frac{1}{9}\right)$$

**Solve the equation .**

$$13) -8 + s = 11$$

**Solve the equation.**

$$14) 9x + 3 = 57$$

**Solve.**

$$15) \frac{4}{5} + 4y = 5y - \frac{3}{20}$$

**Solve.**

$$16) 5(8x - 20) = 4(25x - 10)$$

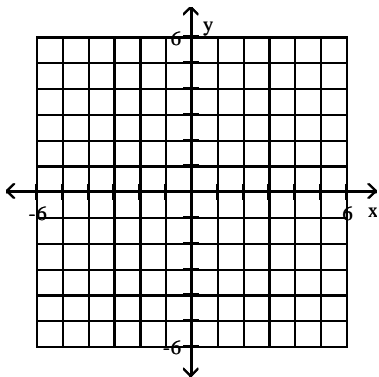
$$17) V = \frac{1}{3}Bh \text{ for } h$$

**Graph the linear equation.**

$$18) -x + 5y = 2$$

**Plot the ordered pairs on the rectangular coordinate system provided.**

$$19) A(3, -2), B(-5, 5)$$



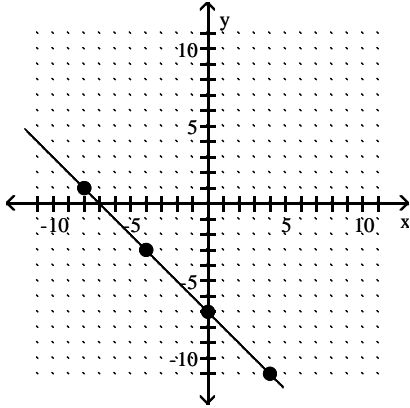
**Find the slope of the line going through the pair of points.**

$$20) (-1, -8), (6, -8)$$

$$21) (3, -4), (3, -1)$$

Find the slope of the line.

22)



Multiply and simplify.

23)  $y^{-9} \cdot y^{-2}$

Divide and simplify.

24)  $\frac{(12x)^{17}}{(12x)^{17}}$

25)  $\frac{t^4}{t^6}$

Simplify.

26)  $\left(\frac{a^4}{b^5}\right)^3$

Divide and simplify.

27)  $\frac{p^2}{p^{-7}}$

Simplify.

28)  $\left(\frac{a^3}{b^4}\right)^4$

Evaluate the polynomial.

29)  $8x^2 + 6x + 3$ , when  $x = -2$

Collect like terms.

30)  $10a^9 - 12a^9 + 10a^7 + 9a^9 - 3a^7$

31)  $9a^8 - 8a^8 + 14a^7 + 13a^8 - 13a^7$

**Add.**

32)  $(3 + 5x^5 + 3x^3) + (9x^5 + 7x^3 + 3)$

**Subtract.**

33)  $(2x + 7x^6 + 16x^5) - (14x^5 + 4x^6 - 7x)$

**Multiply.**

34)  $9x(-2x - 6)$

35)  $(2x - 4)(x + 11)$

36)  $(11p + 1)(11p - 1)$

37)  $(9m + 10)^2$

38)  $(-6y + 1)(-8y^2 - y - 9)$

**Divide.**

39) 
$$\frac{70x^5 + 56x^2 - 21x}{7x}$$

**Factor.**

40)  $5x(4x + 3) + 2(4x + 3)$

**Factor by grouping.**

41)  $x^3 + 6x^2 - 10x - 60$

**Factor.**

42)  $x^2 - x - 42$

43)  $8m^8 - 6m^6 - 12m^2$

**Solve the problem. Round to the nearest hundredth, if necessary.**

44) 15 is 3% of what number?

**Solve the problem. Round to the nearest tenth of a percent.**

45) 4.4 is what percent of 16.5?

**Solve the problem.**

46) A sweater costs \$42.66. If the sales tax rate is 4.5%, how much tax is charged?

47) A telephone costs \$159. If the sales tax rate is 6%, how much tax is charged and what is the total price? Round your answers to the nearest cent.

- 48) The sales tax rate in one state is 4.5%. How much tax will be charged on a purchase of 8 chairs at \$51 apiece? Round your answer to the nearest cent.
- 49) The price of a necklace is \$6.99. If the salesperson's rate of commission is 13%, how much commission is earned on the sale of the necklace? Round to the nearest cent.
- 50) Sales of frozen pizza for a club fund-raiser increased from 500 one year to 690 the next year. What was the percent of increase?
- 51) Bicycles are often on sale in September. The regular price of one bicycle is \$102.95. With a 15% discount, what is the sale price of the bicycle? Round to the nearest cent.
- 52) By switching service providers, a family's telephone bill decreased from about \$50 a month to about \$44. What was the percent of decrease?

**Find the simple interest. Round your answer to the nearest cent.**

- 53) Principal = \$2800  
Interest Rate = 12.3%  
Time in years =  $\frac{1}{3}$

**Find the compound amount for the deposit. Round to the nearest cent.**

- 54) \$16,000 at 8% compounded annually for 7 years

**Solve the problem.**

- 55) The following is a list of heights, in inches, of six people:

Susan	67
Umar	75
Mark	74
Dorota	67
Mike	76
Gina	66

What is the median height?

**Find the mean.**

- 56) 27, 34, 16, 30, 13, 34, 14

**Solve the problem.**

- 57) The following prices per pound of ocean perch were found at seven supermarkets:

\$6.59, \$7.49, \$7.39, \$7.59, \$6.59, \$7.29, \$6.39

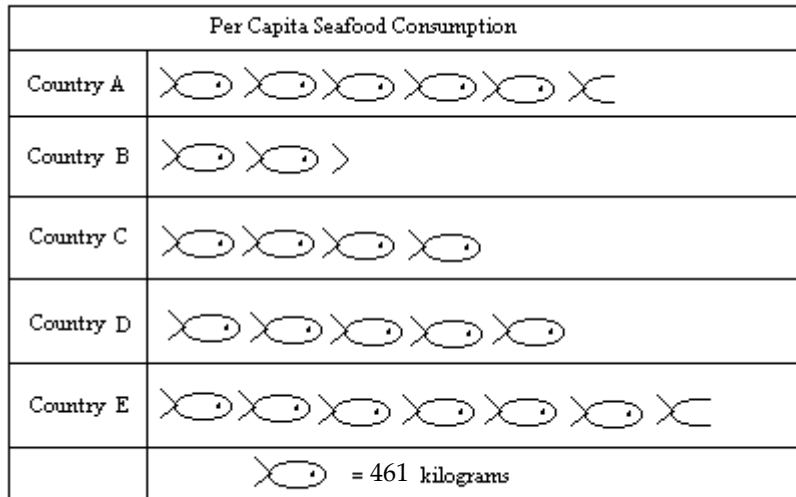
What is the mode?

**Find the midrange for the group of data items.**

- 58) 98, 98, 94, 60, 75, 98

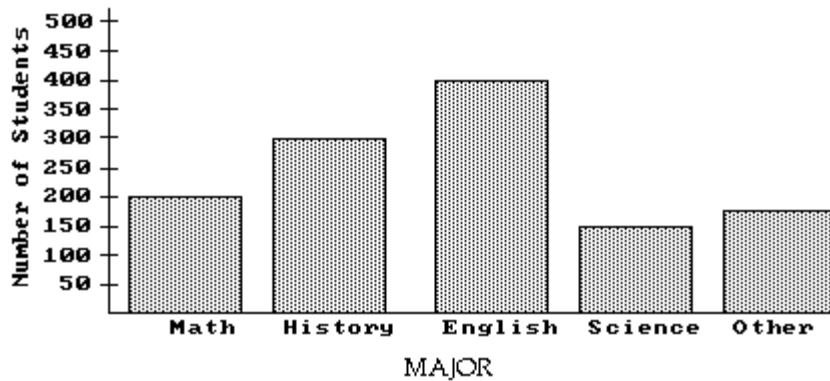
Use the pictograph to answer the question.

59) For selected countries, this pictograph shows approximately how many kilograms of seafood are consumed by each person (per capita) annually.



Approximately how many more kilograms of seafood is eaten per person in Country A than in Country B?

The bar graph below shows the number of students by major in the College of Arts and Sciences. Answer the question.



60) How many more students are majoring in math than in science?

# Answer Key

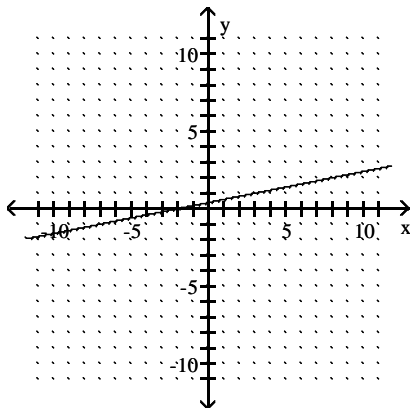
## Testname: MATH 0309 FINAL REVIEW

- 1) {2, 3, 4, 5}
- 2)  $\emptyset$
- 3) {0, 3, 5, 7, 8, 13}
- 4) {q, r, s, t, u, v, x, z}
- 5) It's raining in Chicago or it's windy in Boston.
- 6) True
- 7)  $t \quad s \quad (t \wedge s) \vee (\sim t \wedge \sim s)$

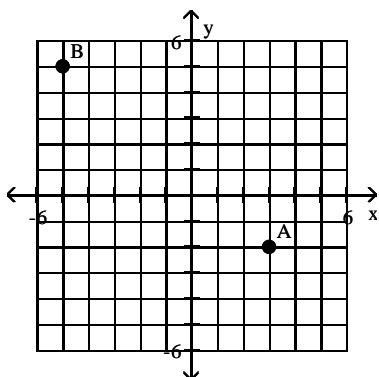
T	T	T
T	F	F
F	T	F
F	F	T

- 8) -54
- 9)  $14x - 27$
- 10) -20
- 11) 4
- 12) -3
- 13) 19
- 14) 6
- 15)  $\frac{19}{20}$
- 16) -1
- 17)  $h = \frac{3V}{B}$

18)



19)



20) 0

21) Undefined

22) -1

23)  $\frac{1}{y^{11}}$

24) 1

25)  $\frac{1}{t^2}$

26)  $\frac{a^{12}}{b^{15}}$

27)  $p^9$

28)  $\frac{a^{12}}{b^{16}}$

29) 23

30)  $7a^9 + 7a^7$

31)  $14a^8 + 1a^7$

32)  $14x^5 + 10x^3 + 6$

33)  $3x^6 + 2x^5 + 9x$

34)  $-18x^2 - 54x$

35)  $2x^2 + 18x - 44$

36)  $121p^2 - 1$

37)  $81m^2 + 180m + 100$

38)  $48y^3 - 2y^2 + 53y - 9$

39)  $10x^4 + 8x - 3$

40)  $(5x + 2)(4x + 3)$

41)  $(x + 6)(x^2 - 10)$

42)  $(x + 6)(x - 7)$

43)  $2m^2(4m^6 - 3m^4 - 6)$

44) 500

45) 26.7%

46) \$1.92

47) \$9.54, \$168.54

48) \$18.36

49) \$0.91

50) 38%

51) \$87.51

52) 12%

53) \$114.80

54) \$27,421.19

55) 70.5 inches

56) 24

57) \$6.59

58) 79

59) 1498.25 kilograms

60) 50