Suffolk University
Department of Mathematics and Computer Science
Review Sheets for the Placement Exam v2

Signed Numbers

Simplify:

1) $-6 + 2 =$

2) $12 - (-2) =$

3) $-3 - 12 =$

4) $-15(-8) =$

5) $-12(6) =$

Order of Operations

Evaluate:

6) $2 - (-6(8 + 6)) =$

7) $13 - 4(3 - 9) =$

8) $\dfrac{19 - 6(3)}{4 + 3} =$

Absolute Values

Evaluate:

9) $\left|14\right| + \left|9\right| =$

10) $\left|-2-7\right| - \left|3+2\right| =$

11) $7 \cdot \left|4-9\right| + \left|8\right| =$

Exponents

Evaluate:

12) $6^0 =$

13) $5^4 =$

14) $5x^3 \cdot x^2 =$

15) $4(x^4)^6 =$

Radicals(square roots)

Simplify:

16) $\sqrt{121} =$

17) $(\sqrt{3})^2 =$

True or false?

18) $4\sqrt{2} > 3$

19) $3\sqrt{6} < \sqrt{36}$

Fractions

Simplify as much as possible:

20) $\dfrac{6}{27} =$

Fill in the missing number:

21) $\dfrac{4}{9} = \dfrac{}{81}$

Change to a mixed number:

22) $\dfrac{13}{5} =$

Change to an improper fraction:

23) $6\dfrac{3}{4} =$

Simplify the following as much as possible:

24) $\dfrac{1}{3}(5+10) =$

25) $(\dfrac{1}{6}+\dfrac{2}{5})+8 =$

Compare the sizes of the following pairs. Which number is larger?

26) $\dfrac{4}{9}$ or $\dfrac{2}{5}$

27) $\dfrac{9}{10}$ or $\dfrac{10}{13}$

Perform the following operations: (reduce to lowest terms)

28)   Add: $\dfrac{4}{5} + \dfrac{2}{7}$

29)   Multiply: $\dfrac{5}{6} \times \dfrac{3}{10}$

30)   Divide : $\dfrac{12}{19} \div \dfrac{1}{3}$

31)   Subtract: $\dfrac{5}{6} - \dfrac{1}{2}$

32)   Subtract: $7 - 3\dfrac{5}{6}$

33)   Multiply: $3\dfrac{1}{3} \times 5\dfrac{1}{10}$

34) Add: $1\dfrac{1}{5} + 5\dfrac{2}{3}$

Arithmetic of Decimals

Perform the indicated operations without a calculator:

35) $.353 + .757$

36) $2.30 + 0.06$

37) 0.53×0.02

38) 0.44×0.05

Percentages

39) Change 0.75 to a percentage

40) Change 79.3% to a decimal

41) Change 4.1% to a decimal

42) Change 0.543 to a percentage

Simplifying Expressions

Simplify as much as possible. Do <u>not</u> solve

43) $7+(2-a)$

44) $8-(4(-x+7))$

45) $\dfrac{4}{9}(2x)$

46) $-5(x-3)-(-x+7)$

Evaluating Expressions

Simplify as much as possible

47) $x^2 - 3x + 4$ when x = 2

48) $2t^3$ when t = 4

Solving Linear Equations

Solve for the variable in each of the following. Simplify your answers.

49) $A - 3 = 13$

50) $C + 9 = -9$

51) $2(x + 5) = 6x + 14$

Working with Formulas
Substituting and solving

52) $2 - A = B + x$ Solve for A if   B = 4,   x = 4

53) $cd = a + 8$ Solve for d if   c = 9,   a = 10

54) $ax - y = 16$ Solve for x if   a = 8,   y = 5

55. Find the following:

a. If $f(x) = x^3 + 4x^2 + 3$, find f(1)

b. If $h(x) = 3x^3 + x^2 - 4x$, find h(0)

56. Expand the following expressions and simplify the results.

a. $(x+2)(x-3)$

b. $(x-6)(x+6)$

57. Simplify the following. Your answers should contain no parentheses.

a. $(x-4)^2 + x(x+4)$

b. $x(x+5) + (x+5)^2$

58. Simplify the following:

a. $\dfrac{x^5}{x^2}$

b. $\dfrac{x^4}{x^9}$

59. Solve for x:

a. $x^2 = 169$

b. $3x^2 = 75$

c. $x^2 - 25 = 0$

d. $x^2 + 6x + 9 = 0$

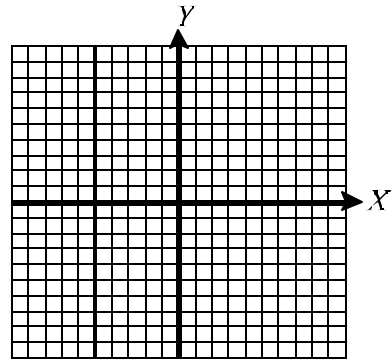60. Find the equation of the straight line which passes through (2, 6) and has slope of 2.

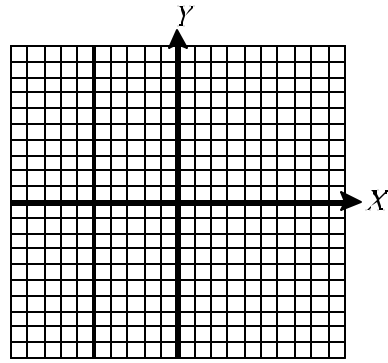61. Find the slope of the line that has the equation.

a. $3x + 5y = 7$

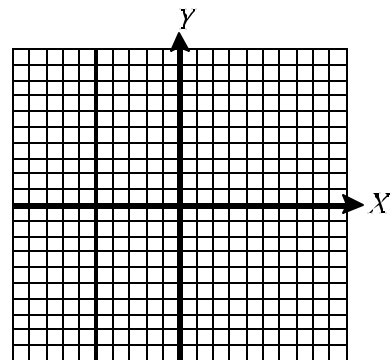b. $-4x + 10y = 8$

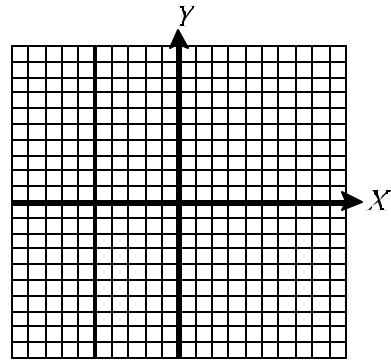62. Graph the equation.

a. $y = -x + 4$

b. $y = 3x^2$

c. $y = -2x^2$

d. $y = x^2 + 5$

63. Simplify the following.

    a. $\sqrt{81}$

    b. $\sqrt{x^4}$

    c. $8^{-2/3}$

$d. \; 4x^2 \cdot x^5$

$e. \; \dfrac{15x^5}{3x^{-2}}$

64. List the value(s) of x at which the functions is undefined.

a. $f(x) = \sqrt{x}$

b. $g(x) = \sqrt{x-4}$

c. $h(x) = \dfrac{4}{3x+4}$

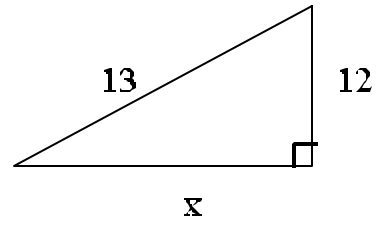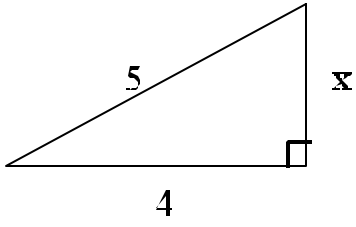65. Solve the inequalities for x that is, find all values of x for which this inequalities holds.

a. $x + 3 \leq 0$

b. $3x - 4 > 0$

c. $x^2 - 9 > 0$

d. $2x + 5 > 3x - 7$
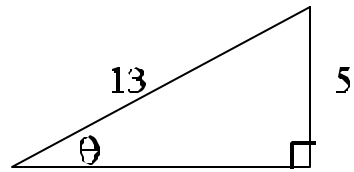
66. Find x:

67.   Find x:

68. Find cos θ:

69. Find x   if $\sin x = \dfrac{1}{2}$ and $0 < x < \dfrac{p}{2}$

70. Express $270°$ in radians

71. Express $180°$ in radians

72. Simplify $\sqrt{1-\sin^2 y}$, $0 < y < \dfrac{p}{2}$

73. Let q be an acute angle of a right triangle and $\tan q = \dfrac{4}{3}$. Find $\sin q$.

74. Find the exact value of the expression $\sin 90° + \cos 90°$

75. Find $\tan^2\left(\dfrac{p}{3}\right) + \sin^2\left(\dfrac{p}{6}\right)$