

# MATH D UNIT 2 REVIEW

## INSTRUCTIONS:

Show all of your work on separate paper, do not write answers on this review sheet. Number each problem in order on your paper and box your answers. Follow directions for each problem.

**I. Solve the inequality and put your answer in interval notation. Graph the solution on a number line. (See sections 4.1, 4.2)**

1)  $\frac{2}{3} > \frac{5}{2}x - 1$

2)  $\frac{1}{2}x - \frac{3}{4} \leq \frac{7}{8}$

3)  $-2 > 6 - 2x \geq -14$

4)  $-23 \leq 2x - 7 < 33$

5)  $-3x > 6$  or  $2x - 5 \geq 5$

6)  $x - 9 \leq -9$  or  $-9x + 10 < 0$

**II. Solve each absolute value equation. (See section 4.3)**

7)  $|2m - 7| + 5 = 13$

8)  $|5 - 3y| - 15 = 10$

**III. Solve the absolute value inequality and put your answer in interval notation. Graph the solution on a number line. (See section 4.3)**

9)  $|3x - 4| > 9$

10)  $|3x - 6| - 5 \geq 4$

11)  $|-4x + 2| < 6$

12)  $|8x - 3| - 9 \leq -4$

13)  $\left|\frac{x}{5} - 7\right| - 1 > 0$

14)  $\left|\frac{x}{3} + 9\right| + 10 \leq 22$

**IV. Graph the inequalities below on graph paper. *Include a scale.* (See section 4.4)**

15)  $y \geq \frac{2}{3}x - 1$

16)  $y < -\frac{3}{4}x + 2$

17)  $2x + 3y > 6$

18)  $-3x - 2y > 4$

**V. Graph the solution to the system of inequalities. *Include a scale.* (See section 4.4)**

19)  $\begin{cases} y < -x + 4 \\ y > x - 4 \end{cases}$

20)  $\begin{cases} x + y \geq 2 \\ x - y \geq 4 \end{cases}$

**VI. Solve the following problems by setting up an inequality and solving. (See section 4.1)**

- 21) A person can choose between two checking account plans. The first plan involves a fixed cost of \$11 per month plus 6 cents for each check written. The second plan involves a fixed cost of \$4 per month plus 20 cents for each check written. How many checks should be written to make the first plan a better deal? You must set up an inequality and solve it for credit.
- 22) You are choosing between two telephone plans for local calls. Plan A charges \$25 per month for unlimited calls. Plan B has a monthly fee of \$13 with a charge of \$0.06 per local call. How many telephone calls in a month make plan A the better deal? You must set up an inequality and solve it for credit.

**VII. Simplify the expressions below. (See sections 5.1, 5.2)**

23)  $(12y^5 + 7y^4 - 3y^2 + 6y) - (-10y^5 - 8y^3 + 3y^2 + 14)$

24)  $(3x^4y^2 + 5x^3y - 3y) - (2x^4y^2 - 3x^3y - 4y + 6x)$

25)  $(7x - 10y)^2$

26)  $(3a + 4b^2)^2$

27)  $-3x^2yz \left( 5xy - \frac{1}{3}xz^5 - 3 \right)$

28)  $-9s^2t(5t^2 - 16st + 6)$

29)  $-\frac{1}{2}mn(m^5n^6p + 4mn^4 - 16p)$

30)  $(2x - 5)(2x^2 - x + 3)$

31)  $(4x + 3)(2x^2 - 3x + 1)$

**VIII. Factor completely. (See sections 5.3 – 5.6)**

32)  $3y^2 - 12$

33)  $9x^2 - 9$

34)  $x^4 - 14x^2 - 32$

35)  $y^4 + 5y^2 - 36$

36)  $27x^3 - 8$

37)  $125x^3 + 64$

38)  $6x^2 - 13x - 5$

39)  $8x^2 - 10x - 3$

40)  $4a^3 - ab^2 - 4a^2b + b^3$

41)  $x^3 - 16xy^2 - 2x^2 + 32y^2$

42)  $24x^2 + 3xy - 27y^2$

43)  $12x^2y - 46xy^2 + 14y^3$

44)  $x^5 + x^3 + 8x^2 + 8$

**IX. Solve the equations. (See section 5.7)**

45)  $3a^3 - 48a = 0$

46)  $5b^3 - 500b = 0$

47)  $3x^2 + 5x - 2 = 0$

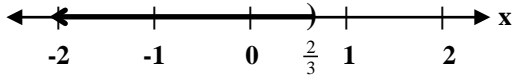
48)  $9x^2 - 30x = -25$

**X. Solve the following problems. Set up an equation and solve it for credit. (See section 5.7)**

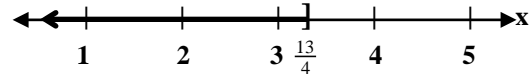
- 49) The length of a rectangle is **three times** its width. Find the dimensions of the rectangle if its area is **48** square centimeters.
- 50) The width of a rectangle is **10 centimeters less than** its length. Find the dimensions of the rectangle if its area is **1,200** square centimeters.

# MATH D UNIT 2 REVIEW *Answers*

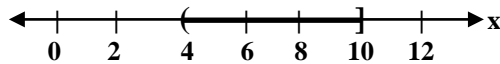
1)  $\left(-\infty, \frac{2}{3}\right)$



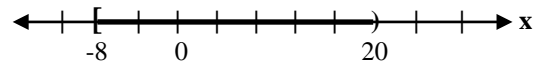
2)  $\left(-\infty, \frac{13}{4}\right]$



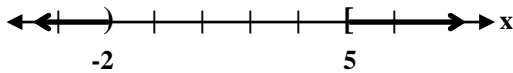
3)  $(4, 10]$



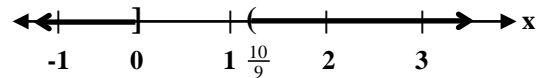
4)  $[-8, 20)$



5)  $(-\infty, -2) \cup [5, \infty)$



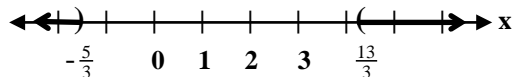
6)  $(-\infty, 0] \cup \left(\frac{10}{9}, \infty\right)$



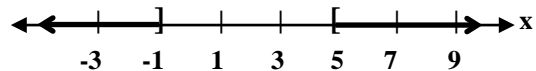
7)  $\left\{-\frac{1}{2}, \frac{15}{2}\right\}$

8)  $\left\{-\frac{20}{3}, 10\right\}$

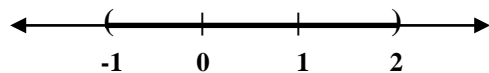
9)  $\left(-\infty, -\frac{5}{3}\right) \cup \left(\frac{13}{3}, \infty\right)$



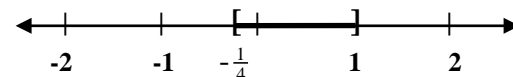
10)  $(-\infty, -1] \cup [5, \infty)$



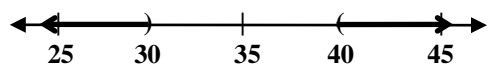
11)  $(-1, 2)$



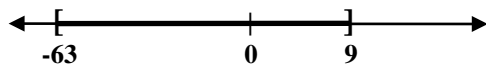
12)  $\left[-\frac{1}{4}, 1\right]$



13)  $(-\infty, 30) \cup (40, \infty)$



14)  $[-63, 9]$



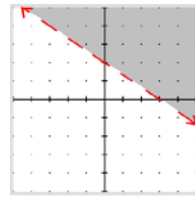
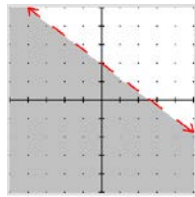
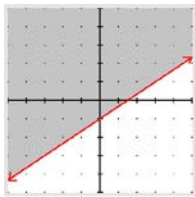
15)  $y \geq \frac{2}{3}x - 1$

16)  $y < -\frac{3}{4}x + 2$

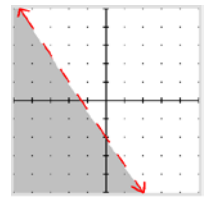
17)  $2x + 3y > 6$

18)  $-3x - 2y > 4$

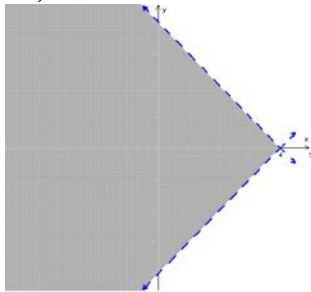
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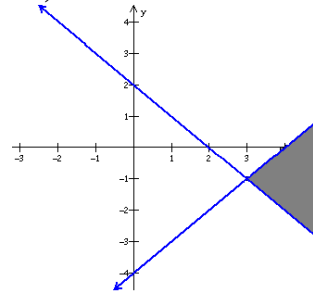
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19)



20)



21) More than 50 checks.

22) More than 200 calls.

23)  $22y^5 + 7y^4 + 8y^3 - 6y^2 + 6y - 14$

24)  $x^4y^2 + 8x^3y + y - 6x$

25)  $49x^2 - 140xy + 100y^2$

26)  $9a^2 + 24ab^2 + 16b^4$

27)  $-15x^3y^2z + x^3yz^6 + 9x^2yz$

28)  $-45s^2t^3 + 144s^3t^2 - 54s^2t$

29)  $-\frac{1}{2}m^6n^7p - 2m^2n^5 + 8mnp$

30)  $4x^3 - 12x^2 + 11x - 15$

31)  $8x^3 - 6x^2 - 5x + 3$

32)  $3(y - 2)(y + 2)$

33)  $9(x - 1)(x + 1)$

34)  $(x^2 + 2)(x + 4)(x - 4)$

35)  $(y^2 + 9)(y + 2)(y - 2)$

36)  $(3x - 2)(9x^2 + 6x + 4)$

37)  $(5x + 4)(25x^2 - 20x + 16)$

38)  $(3x + 1)(2x - 5)$

39)  $(2x - 3)(4x + 1)$

40)  $(2a + b)(2a - b)(a - b)$

41)  $(x - 4y)(x + 4y)(x - 2)$

42)  $3(8x + 9y)(x - y)$

43)  $2y(3x - y)(2x - 7y)$

44)  $(x^2 + 1)(x + 2)(x^2 - 2x + 4)$

45)  $\{0, 4, -4\}$

46)  $\{0, 10, -10\}$

47)  $\left\{\frac{1}{3}, -2\right\}$

48)  $\left\{\frac{5}{3}\right\}$

49)  $W = 4 \text{ cm. } L = 12 \text{ cm.}$

50)  $W = 30 \text{ cm. } L = 40 \text{ cm.}$