

Review for the first exam

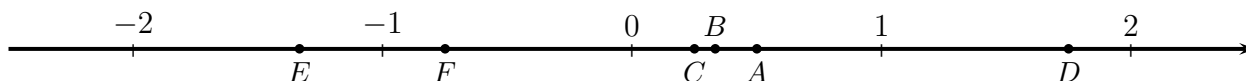
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Disclaimer The following is a set of questions to help you review what we have covered in class. If you know how to answer these questions then you should do well in the exam. However there is no guarantee that the questions in the actual exam will be perceived to be similar to these questions.

1. Put the following fractions in order from smallest to largest:

$$\frac{2}{3}, \frac{5}{7}, \frac{13}{21}$$

2. Indicate which point in the number line below corresponds to which number.



- Point ____ corresponds to $-\frac{4}{3}$
 - Point ____ corresponds to $\frac{1}{2}$
 - Point ____ corresponds to $\frac{1}{3}$
 - Point ____ corresponds to $\frac{1}{4}$
 - Point ____ corresponds to $\frac{3}{2}$
 - Point ____ corresponds to $-\frac{3}{4}$
3. Evaluate: $7 - 3(2 - 7) - 3^3 \div 9 \cdot 3$
4. Evaluate: $\frac{-25}{16} \cdot \frac{20}{-9} \cdot \left(-\frac{54}{11}\right) \cdot \frac{6}{-7} \cdot \frac{77}{50}$
5. Evaluate: $-4^2 + 4(-6 + 10)$
6. Evaluate:

$$1 + \frac{3}{2} \\ \frac{3}{10} - \frac{4}{5}$$

7. Evaluate: $\frac{3}{5} - \frac{7}{10}$
8. Evaluate: $3 - |-25 - 2 \cdot (7 - 14)|$
9. Evaluate, if $a = -\frac{3}{4}$, $b = \frac{7}{8}$ and $c = -\frac{1}{12}$: $-6a + 10b - 7c$
10. Evaluate if $x = -7$ and $y = -5$: $y^2 - x^2$.
11. Evaluate if $a = 3$, $b = -2$, $c = 7$, $d = 2$, and $x = -1$: $\frac{ax + b}{cx + d}$
12. Evaluate if $x = 3$: $x^3 - 4x^2 + x + 6$
13. Evaluate $3 - 2x - 3(x - 1)$, when $x = \frac{2}{3}$.
14. Evaluate $4x^2 + 4x + 1$, when $x = -\frac{1}{2}$.
15. Evaluate each of the following expressions:
- $-3^2 - 4(-2 - 3 \cdot 2)$
 - $-10 - (30 \div 15 \cdot 2 - 14)$
 - $\frac{4 \cdot 5 + 3(5 - 7)^2 - 2^2}{-3^2 + 5(7 - 8)}$
16. Evaluate the expression $x^2 + 2xy + y^2$, when $x = -2$ and $y = -3$.
17. Evaluate $-2x^2 + 3x + 4$, when:
- $x = 0$
 - $x = 1$
 - $x = -1$
 - $x = -2$
 - $x = 3$
 - $x = \frac{3}{2}$
 - $x = -\frac{2}{3}$
18. Evaluate $\frac{y_2 - y_1}{x_2 - x_1}$, when
- $x_1 = -1$, $x_2 = 1$, $y_1 = -5$, $y_2 = 5$
 - $x_1 = -2$, $x_2 = 3$, $y_1 = -3$, $y_2 = 4$
 - $x_1 = 2$, $x_2 = 4$, $y_1 = 1$, $y_2 = 2$

(d) $x_1 = -2, x_2 = -3, y_1 = -4, y_2 = -6$

(e) $x_1 = 0, x_2 = 3, y_1 = 5, y_2 = 0$

19. Evaluate the expression $\sqrt{b^2 - 4ac}$, when:

(a) $a = -2, b = -1, c = 3$

(b) $a = -3, b = 5, c = -2$

(c) $a = 15, b = -3, c = 2$

(d) $a = 15, b = 7, c = -2$

(e) $a = 6, b = 5, c = \frac{2}{3}$

20. Evaluate the expression $-a^2 + 3a$, when $a = 2$.

- A. 10 B. 2 C. -10 D. -2

21. Evaluate the expression

$$\frac{5 - x^2}{3x + 4}$$

when $x = -3$.

- A. $\frac{14}{9}$ B. $-\frac{14}{9}$ C. $\frac{4}{5}$ D. $-\frac{4}{5}$

22. If x represents an unknown number then seven subtracted from twice that number is represented by the expression: A. $2(x - 7)$ B. $2(7 - x)$ C. $7 - 2x$ D. $2x - 7$

23. Write a mathematical expression that represents the following phrase:

(a) n more than 19.

(b) x less than 27.

(c) 16 less than twice a number.

(d) 9 divided by the sum of a number and eleven.

(e) The difference of eleven times a number and five times its square.

(f) Six subtracted from three times the sum of twice a number and its cube.

24. If y represents an unknown number, which expression is a correct translation of the phrase:

The sum of six times a number and five, divided by eight less than the same number.

- A. $\frac{30x}{x - 8}$ B. $\frac{6x + 5}{8 - x}$ C. $\frac{6x + 5}{x} - 8$ D. $6x + \frac{5}{8 - x}$ E. $\frac{6x + 5}{x - 8}$

For the following statements indicate whether they are true or false:

25. If $x = -\frac{1}{2}$ and $y = \frac{3}{4}$, then $2x + 8y = -5$

- A. True B. False.

26. If $x = 3$ and $y = -2$, then $x^2 + 2y = y^2 - x + 4$

- A. True B. False.

27. If $x = -2$ then $-x^2 - 2x = 0$

- A. True B. False.

28. Solve the following equations:

(a) $3(x - 2) = 6$

(b) $2x - 8 = 6x + 22$

(c) $3(5x - 6) + 2 = 8x - 16$

(d) $2(x - 3) = 3(x - 2) - x$

(e) $-4(2x - 1) + 3x - 2 = 3(x + 1) - 5x$

(f) $7x - 2(3x - 1) + 2 = -5(x + 1) + 6x + 2$

(g) $\frac{2}{5}(3 - x) + 5 = \frac{7}{10} - x$

(h) $\frac{x + 2}{2} - \frac{2}{3} = \frac{2x + 3}{3} - \frac{7}{6}$

(i) $3x + \frac{5 - 2x}{4} - 1 = \frac{4x + 5}{3} - 6x - 5$

29. Solve and graph the following inequalities:

(a) $2x - 3 < 6$

(b) $2(x - 3) + 4 \leq x - 5$

(c) $3(2x - 1) + 4(3x + 5) > 2(x - 6)$

(d) $-2(x - 3) \geq -4(x + 1) - 2x + 3$

(e) $\frac{2x - 3}{5} + x < 3x + 1$

(f) $\frac{x}{3} - \frac{3}{5} \geq \frac{16}{15}$

30. Solve each of the following formulas for the indicated variable:

(a) $-2x + 3y = 12$, for y .

(b) $\frac{2x + y}{3} = 5$, for y .

(c) $A = (b + c)h$, for h .

(d) $I = Prt$, for r .

(e) $A = (b + c)h$, for b .

(f) $ax + b = cx + d$, for x .

31. Solve for a : $5(2 - 3a) = 1 - 12a$

- A. $a = 5$ B. $a = -5$ C. $a = 3$ D. $a = -3$

32. Solve the following equation:

$$2(6x - 5) + 7 = 4(3x + 2) - 11$$

A. $x = 0$

B. $x = 11$

C. This equation has no solution.

D. All numbers are solutions.

33. Solve the following equation:

$$5(x - 2) - 3x + 2 = 2x + 3$$

A. $x = 0$

B. $x = 3$

C. This equation has no solution.

D. All numbers are solutions.

34. Solve for z : $2x - 4z = 3 - y$

A. $z = \frac{2x - y + 3}{4}$

B. $z = \frac{3 - 2x - y}{4}$

C. $z = \frac{2x + y - 3}{4}$

D. $z = -4(2x + y - 3)$

35. Given that $a = 2$, $b = -3$, and $b^2 - 4ac = 0$, find c .

36. Find b if $x = -2$ and $y = 3$ is a solution to the equation $y = -4x + b$.

37. Eleven more than twice an unknown number is the same as seven less than three times that number.

(a) If n stands for the unknown number, then the English statement above translates to the following mathematical statement:

- A. $2n + 11 = 3n + 7$
- B. $2(n + 11) = 3(n - 7)$
- C. $2n + 11 = 3n - 7$
- D. $2n + 11 = 7 - 3n$

(b) The unknown number is:

- A. 18
- B. -18
- C. 4
- D. -4

38. Write a mathematical statement that represent the following English statement:

Five more than three times a number is 65.

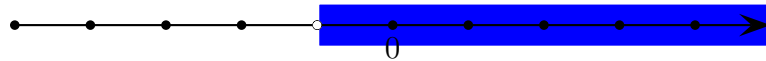
39. Find the number that satisfies the statement in Question 38.

40. The perimeter of a rectangle is 39 inches. Find the dimensions of the rectangle if the width is six inches more than eight times the length.

41. The sum of three consecutive integers is 90. Find the integers.

42. Five subtracted from three times a number is twenty two. Find the number.

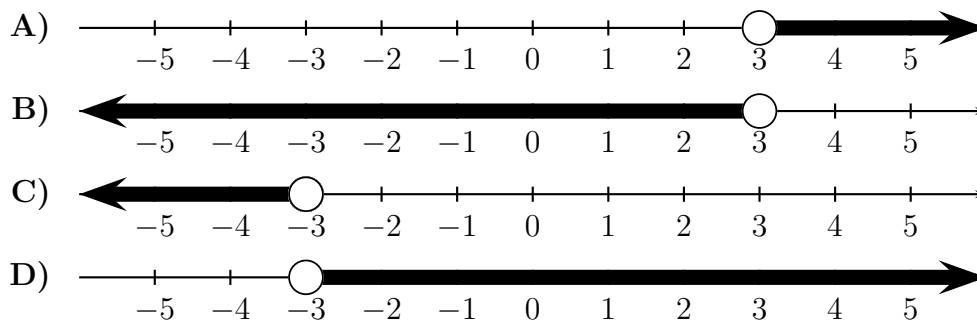
43. The following is the graph of the solution set of a linear inequality.



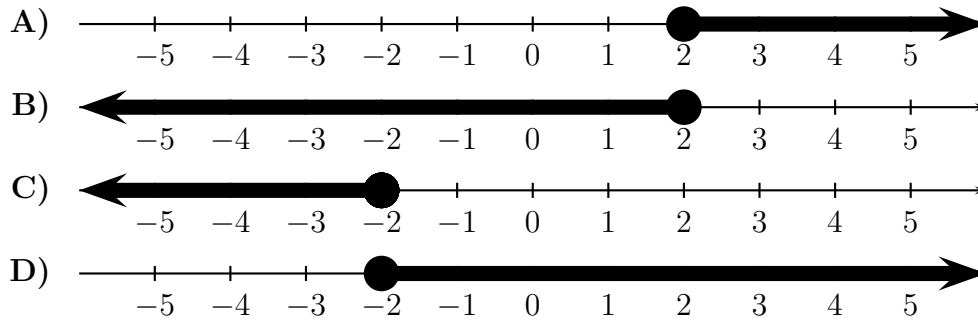
The inequality is:

- A. $x - 1 > -2$
- B. $x - 1 < -2$
- C. $x - 1 \geq -2$
- D. $x - 1 \leq -2$

44. Find the graph of the solution to the inequality $2x - 6 < 5x + 3$



45. Find the graph of the solution to the inequality $-4x - 3 \geq 2x + 9$



46. Recall that the formula that converts degrees Fahrenheit F to degrees Celsius C :

$$C = \frac{5}{9}(F - 32)$$

A certain day the temperature measured in degrees Celsius was 60 less than when it was measured in Fahrenheit. What was the temperature that day?