1. Hello, and welcome to the Orientation section of your course. This set of problems will introduce you to many of the features that you might see as you work through this course.

   This problem will highlight some of the helpful features that are available in most problems.

   When you are practicing problems in the Study Plan, or working on a Homework assignment, the problems are broken up into steps, which are displayed one at a time.

   Some steps do not require you to enter an answer. After you have read the information in one of these steps, click the Continue button to advance to the next step.

   > ***Did you notice?*** At the bottom left of the window, there is a status line that provides directions for the current step. Right now it says "Press Continue to see more." At the right end of the status line, there is a button,  , which opens up a Student Help menu that you can reference for more information.

   When an active step requires you to enter an answer or answers before advancing to the next step, you can check whether the answer(s) in the current active part are correct by clicking the Check Answer button.

   In general, for a step with an answer box, the player allows three incorrect tries before marking the answer box incorrect and displaying the correct answer. Note that on a Homework assignment the Check Answer button changes to say Final Check on your last try.

   Type the number 1 in the following answer box. _____

   Notice the Question Help dropdown menu on the top right of the window. That menu contains learning aids that demonstrate how to answer similar questions to the one you are working on. Some or all of these learning aids may be available depending on your instructor's settings for this course.

   Click the Animation button and watch the "How to Enter Answers" tour. Then try some of the other learning aids.

   Careful: The Help Me Solve This link will give you information about solving the problem you are working on, but then when you close that link, it will reload the exercise, requiring you to start over with a similar but different problem.

   Some questions will contain information, like charts or tables, in a popup step. To open the popup, click on the icon or the text of the hyperlink, as directed.

   [1]Click the icon to view the correct answer, OR click here to view the answer.[2]

   Type the number shown in the popup. _____

   You have completed this problem. You can either go on to the next problem, or you can try a similar version of this problem, if additional attempts are allowed by your instructor, by clicking Similar Question.

   1: Answer to the following question

   The answer is 5.

   2: Answer to the following question

   The answer is 5.

2. Some questions require you to choose a single correct answer from a list of possible answers.

Click the button near the choice to select your answer. Then click the Check Answer button. You might also want to try an incorrect answer to see the feedback that will be displayed.

Choose the smiling face below.

○ **A.**

○ **B.**

Did you notice? Questions like the one above use a circular button for each choice, and you can only choose one answer from the list for each attempt.

3. Some questions allow you to choose several correct answers from a list of possible answers.

Click the square near each correct choice to fill it in. Be sure to mark all correct answers.

Which of the following mathematical statements are true? Select all that apply.

☐ **A.** $2 - 2 = 1$
☐ **B.** $1 \cdot 2 = 2$
☐ **C.** $1 \cdot 1 = 1$
☐ **D.** $1 + 2 = 2$
☐ **E.** $1 + 1 = 2$

Did you notice? Questions like the one above use a square button for each choice, and you can choose multiple answers from the list for each attempt.

4. Some questions require you to choose an answer from a dropdown list.

Click the dropdown list below to view the choices, and then click on the correct answer to select it. To change your answer, click the answer box to reopen the list of choices.

To get credit for this question, your answer must be (1) _____ .

Careful: Because there are only two answer choices for this question, by default you will only get one try to answer it correctly.

(1) ○ correct
○ incorrect

5. Many problems require you to enter a number or expression in an answer box, using the keyboard.

Answer the following question by clicking in the answer box and typing your answer. Then click the Check Answer button.

You might also want to try an incorrect answer to see the feedback that will be displayed.

4 + 1 = _____
(Simplify your answer. Type a whole number.)

> ***Did you notice?*** The special **navy blue** instructions, in parentheses, that appear after the answer box give directions about how to enter your answer. It is important to read and follow these instructions so that your answer will be entered in the correct form. Unless it is otherwise stated, your answer should be exact and simplified as much as possible.

The **math tool palette** contains templates that you can use to enter fractions, exponents, roots, and other special math notation. The math tool palette is shown along the bottom of the window and only appears when you click into an answer box. You can expand it to show more tool buttons or collapse it to show fewer buttons.

To use the palette:
1. Click on the location in the answer box where you want to insert a symbol or template.
2. Click on the button in the math palette for the symbol or template you want to insert.
3. Once a template is inserted, click in the blue box to fill in the necessary value(s).
4. Click or use the directional arrows to move the cursor outside the template in order to continue entering your answer.

The math tool palette is not present in this step because there is no answer box. You will be able to practice using the palette in one of the following steps.

Careful: Always be sure to delete any unused templates from the answer box before clicking "Check Answer." For your answer to be complete, all the blue boxes within each template must be filled in.

Select the picture(s) below that show answers that are complete, meaning that they do not contain any empty blue boxes from a template. Select all answers that are complete.

- ☐ **A.** $x - \frac{1}{5}$
- ☐ **B.** $\sqrt{29}$
- ☐ **C.** $(2, -4\ )$
- ☐ **D.** $3x^2 + 4y$
- ☐ **E.** None of the above answers are complete.

Use the fraction and exponent templates from the math palette (or use the associated keyboard shortcuts) to enter $\frac{x^2}{3}$ into the answer box.

Enter $\frac{x^2}{3}$ here. _____

Careful! Be sure the exponent 2 is right next to the x *inside* the fraction. If the exponent is outside the fraction, your answer may look similar but will be evaluated differently. You will know your cursor is inside the fraction when the blue box for the fraction template displays. You can tell the exponent is inside the fraction when the fraction bar is extended to display beneath the 2, like in the fraction shown above.

The following tips can help you to avoid common mistakes that students make with entering answers into answer boxes.

Equations

Do not enter "x = " or "y = " in the answer box if that part of the equation is already given before the answer box.

Correct: $x = 4$

Incorrect: $x = x = 4$

Click the Continue button to advance to the next step.

Rounding

Answers should only be rounded when the problem specifically asks for a rounded answer. Pay close attention to the rounding instructions given in the problem. Unless otherwise instructed, always use the most precise numbers possible when calculating your answer, and then round only the final answer to the specified number of decimal places.

Multiple answers

When problems expect multiple answers in a single answer box, the answers must be separated by commas. If you are using templates from the math palette in one of those answers, be sure to type the comma outside of the template.

Choose the answer below that has the commas entered in the correct positions.

- **A.** $\sqrt{3}, \frac{1}{2}, |5|, 4$
- **B.** $\sqrt{3}, \frac{1}{2}, |5, |4$
- **C.** $\sqrt{3,} \frac{1}{2}, |5|, 4$
- **D.** $\sqrt{3}, \frac{1}{2,} |5|, 4$

Copy/Paste

Using copy/paste is only recommended for copying numbers from an online calculator or spreadsheet program allowed by your instructor, or for copying an existing expression from your answer box to duplicate it in that answer box or another answer box.

Careful! Other programs use different coding for mathematical templates and symbols, and so expressions copied in from other programs or websites may not be recognized. It is always a best practice to enter your answer using the keyboard and the math palette.

Alternate Answers and Tolerance

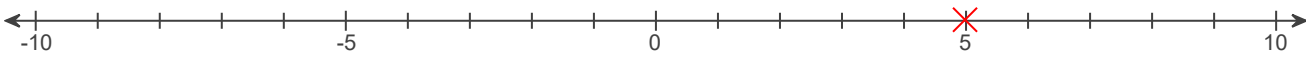
If a problem requires you to round before the final answer or if there are a few different ways to solve a problem, there may be multiple answers which are close to each other, that are all considered to be correct. Sometimes there will be several particular answers that are accepted, and sometimes answers that are within a certain range will be accepted. Try to maintain as much precision as possible when calculating rounded answers.

Enter 4, 6, or any number between 4 and 6 in the answer box. _____
(Type an integer or a decimal.)

6. Some questions make use of the **Interactive Number Line**, which allows you to place a point at a specific location on a number line.

Plot a point at the number 5, marked with a X on the number line.

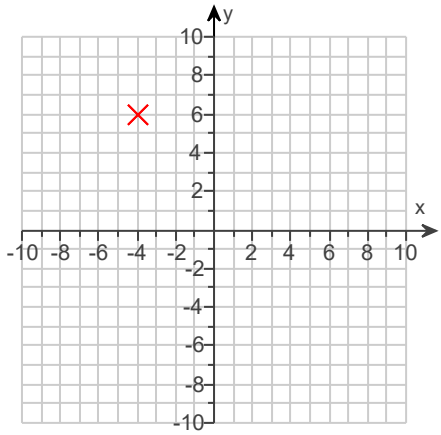
On this number line, the point is initially shown as a dot located at zero. To move this point to the expected location, either **click and drag the point** or **click on the graph and use the arrow keys**.



7. Some questions make use of the **Point Plotting Tool**, which allows you to place a point at a specific location on a graph.

[3] Click the icon to view instructions for the Point Plotting Tool.

Plot the point $(-4,6)$, located at the X, on the graph to the right.



3: Point Plotting Tool Instructions

You can click the pop out button associated with the graph to view the Point Plotting Tool in an enlarged popup window. Alternatively, you can use the Zoom In / Zoom Out magnifying glass buttons associated with the graph to change the size of the graph.

On this graph, the point is initially shown as a dot located at (0,0). To move this point to the expected location, **click and drag the point** or **click on the graph and use the arrow keys**.

For some problems, like this one, the coordinates of the point you are moving will be displayed. See that this information is displayed below the graph in this problem.

8. Select the correct choice that completes the sentence below.

A(n) (1) _____ is a statement that two expressions are equal.

(1)
- identity
- equation

9. Select the correct choice that completes the sentence below.

To (1) _____ an equation means to find all numbers that make the equation a true statement.

(1)
- identify
- solve
- simplify

10. Select the correct choice that completes the sentence below.

A(n) (1) _____ is an equation satisfied by every number that is a meaningful replacement for the variable.

(1) ○ equivalent equation
○ identity

---

11. Select the correct choice that completes the sentence below.

A(n) (1) _____ is an equation that has no solution.

(1) ○ identity
○ root
○ contradiction

---

12. Solve the equation.

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

The solution set is $\{\quad\}$.
(Simplify your answer. Type an integer or a fraction.)

---

13. Solve the equation.

$$\frac{4}{6}x - 2x + \frac{8}{3} = \frac{4}{3}$$

The solution set is $\{\quad\}$ (Simplify your answer.)

---

14. Solve the equation.

$0.2x - 0.5 = 0.1x + 7$

The solution set is $\{\quad\}$.

---

15. Find the solution set. Then indicate whether the equation is conditional, an identity, or a contradiction.

$18(x - 1) = -6(3 - x) + 12x$

Select the correct choice below and fill in any answer boxes present in your choice.

○ **A.** The solution set is $\{\quad\}$.
○ **B.** The solution is the set of all real numbers.
○ **C.** The solution is the empty set.

Indicate whether the equation is conditional, an identity, or a contradiction.
Choose the correct answer.

○ identity
○ contradiction
○ conditional equation

---

16. Determine whether each equation is an identity, a conditional equation, or a contradiction. Give the solution set.

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

Is the equation a conditional equation, an identity, or a contradiction?

- **A.** conditional equation
- **B.** identity
- **C.** contradiction

Select the correct choice below and fill in any answer boxes present in your choice.

- **A.** The solution set is { _____ }
  (Type an integer or a fraction. Use a comma to separ
- **B.** The solution is all real numbers.
- **C.** The solution is the empty set.

17. Determine whether the equation is a conditional equation, an identity, or a contradiction. Give the solution set.

$16(v + 2) - 4v = 3(4v + 2) - 7$

Is the equation a conditional equation, an identity, or a contradiction?

- **A.** contradiction
- **B.** conditional equation
- **C.** identity

Select the correct choice below and fill in any answer boxes present in your choice.

- **A.** The solution set is { _____ }
  (Type an integer or a fraction. Use a comma to separ
- **B.** The solution is all real numbers.
- **C.** The solution is the empty set.

18. Solve.

$n = wsz$, for z

The solution is z = _____.
(Use integers or fractions for any numbers in the expression. Simplify your answer.)

19. Miguel Rodriguez borrowed $500 from his brother Julio to pay for books and tuition. He agreed to pay Julio in 6 months with simple annual interest at 6.7%.

a) How much will the interest amount to?

b) What amount must Miguel pay Julio at the end of 6 months?

The simple interest is $ _____.

The final balance is $ _____.

20. The equation $F = \frac{9}{5}C + 32$ gives the Fahrenheit temperature F corresponding to the Celsius temperature C.

Find the Fahrenheit temperature equivalent to 15°C.

The Fahrenheit temperature equivalent to 15°C is _____ $^\circ$F.
(Simplify your answer. Type an integer or a decimal.)

21. Convert to Celsius. Use the formula $C = \frac{5}{9} \cdot (F - 32)$.

164° F

164° F = _____ $^\circ$ C

(Simplify your answer. Type an integer or a decimal. Round to the nearest tenth if needed.)

22. The winner of a 1000 mile race drove his car to victory at a rate of 111.8996 mph. What was his time (to the nearest thousandth of an hour)?

His time was _____ hours.

(Round to the nearest thousandth.)

23. If a train travels at 80 mph for 30 min, what is the distance traveled?

The distance traveled is _____ miles.

24. If $230 is invested for one year at 5% simple interest, how much interest is earned?

The simple interest is $_____.

25. If a jar of coins contains 40 half-dollars and 120 quarters, what is the monetary value of the coins?

The monetary value of the coins is $_____.

26. Solve.

How much pure acid is in 520 milliliters of a 13% solution?

The answer is _____ ml.

(Type an integer or a decimal.)

27. Suppose that a computer that originally sold for x dollars has been discounted 32%. Which one of the following expressions does not represent its sale price?

Choose the correct answer below.

- **A.** 0.68x
- **B.** $\frac{17}{25}x$
- **C.** $x - 0.32x$
- **D.** $x - 0.32$

28. Suppose that a chemist is mixing two acid solutions, one of 25% concentration and the other of 35% concentration. Which of the following concentrations could not be obtained?

27%, 30%, 33%, 37%

Choose the correct answer below.

- 33%
- 27%
- 37%
- 30%

29. A rectangle has a width of 55 centimeters and a perimeter of 222 centimeters. What is the rectangle's length?

The length is _____ cm.

30. Fill in the blanks.

The imaginary unit i is defined as $i =$ _____, where $i^2 =$ _____.

The imaginary unit i is defined as $i =$ (1) _____ where $i^2 =$ (2) _____

(1) ○ $\sqrt{-1}$, ○ 0, ○ 1, ○ -1,

(2) ○ 1. ○ 0. ○ -1. ○ $\sqrt{-1}$.

31. Select the correct choice that completes the sentence below.

If a and b are real numbers, then any number of the form $a + b\,i$ is a(n) (1) _____

(1) ○ real number.
○ imaginary number.
○ complex number.

32. Select the correct choice that completes the sentence below.

The numbers $6 + 5i$ and $6 - 5i$, which differ only in the sign of their imaginary parts are (1) _____

(1) ○ pure imaginary.
○ nonreal complex.
○ complex conjugates.
○ real.

33. Select the correct choice that completes the sentence below.

The product of a complex number and its conjugate is always a(n) (1) _____

(1) ○ real number.
○ imaginary number.
○ complex number.
○ nonreal complex.

34. Select the correct choice that completes the sentence below.

To find the quotient of two complex numbers in standard form, multiply both the numerator and the denominator by the complex conjugate of the (1) _____

(1)
- denominator.
- denominator's imaginary part.
- numerator's imaginary part.
- numerator.

---

35. Decide whether the given statement is true or false. If false, correct the right side of the equation.

$\sqrt{-169} = 13i$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The given statement is false. The correct right side of the equation is _____.
(Simplify your answer. Type your answer in the form a + bi. Type an exact answer, using radicals as needed.)
- **B.** The given statement is true.

---

36. Decide whether the given statement is true or false. If false, correct the right side of the equation.

$\sqrt{-9} \cdot \sqrt{-4} = -6$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The given statement is false. The correct right side of the equation is _____.
(Simplify your answer. Type your answer in the form a + bi. Type an exact answer, using radicals as needed.)
- **B.** The given statement is true.

---

37. Decide whether the given statement is true or false. If false, correct the right side of the equation.

$i^{20} = 1$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The given statement is false. The correct right side of the equation is _____.
(Simplify your answer. Type your answer in the form a + bi. Type an exact answer, using radicals as needed.)
- **B.** The given statement is true.

---

38. Decide whether the given statement is true or false. If false, correct the right side of the equation.

$(-4 + 6i) - (14 - 5i) = -18 + i$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The given statement is false. The correct right side of the equation is _____.
(Simplify your answer. Type your answer in the form a + bi. Type an exact answer, using radicals as needed.)
- **B.** The given statement is true.

---

39. Decide whether the given statement is true or false. If false, correct the right side of the equation.

$(9+8i)^2 = 17$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The given statement is false. The correct right side of the equation is _____.
  (Simplify your answer. Type your answer in the form a + bi. Type an exact answer, using radicals as needed.)
- **B.** The given statement is true.

40. Write the number as the product of a real number and i.

$\sqrt{-16}$

$\sqrt{-16}$ = _____
(Simplify your answer. Type your answer in the form a + bi. Type an exact answer, using radicals as needed.)

41. Write the number as the product of a real number and i.

$-\sqrt{-72}$

$-\sqrt{-72}$ = _____
(Simplify your answer. Type your answer in the form a + b i . Type an exact answer, using radicals as needed.)

42. Multiply.

$\left(\sqrt{-28}\right)\left(\sqrt{-5}\right)$

$\left(\sqrt{-28}\right)\left(\sqrt{-5}\right)$ = _____
(Simplify your answer. Type an exact answer, using radicals as needed. Type your answer in the form a + bi.)

43. Add and simplify.

$(5+8i)+(8-7i)$

$(5+8i)+(8-7i)$ = _____
(Simplify your answer. Type your answer in the form a + bi.)

44. Perform the indicated operations.

$(4-3i)(8+i)$

$(4-3i)(8+i)$ = _____
(Simplify your answer. Type your answer in the form a + bi.)

45. Find the product.

$(7-6i)^2$

$(7-6i)^2$ = _____
(Simplify your answer. Type your answer in the form a + b i .)

46. Divide.

$\frac{4+3i}{7+8i}$

$\frac{4+3i}{7+8i}$ = _____

(Simplify your answer. Use integers or fractions for any numbers in the expression. Type your answer in the form a + bi.)

47. Find the quotient. Write the answer in standard form a + bi.

$\frac{-10}{i}$

$\frac{-10}{i}$ = _____

(Simplify your answer. Type your answer in the form a + bi.)

48. Simplify.

i^{33}

i^{33} = _____

(Simplify your answer. Type your answer in the form a + bi.)

49. Simplify.

i^{12}

i^{12} = _____

50. Which equation is set up for direct use of the zero-factor property? Solve it.

A. $3x^2 - 10x - 8 = 0$
B. $(5x + 8)^2 = 7$
C. $x^2 + x = 6$
D. $(3x - 2)(x - 5) = 0$

Choose the correct answer below.

- **A.** $3x^2 - 10x - 8 = 0$
- **B.** $(5x + 8)^2 = 7$
- **C.** $x^2 + x = 6$
- **D.** $(3x - 2)(x - 5) = 0$

The solution set is {_____}.
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed. Type an integer or a fraction.)

51. Which equation is set up for direct use of the square root property? Solve it.

Which equation is set up for direct use of the square root property? Choose the correct answer below.

- **A.** $(2x-1)(x-3)=0$
- **B.** $2x^2-7x-4=0$
- **C.** $x^2+x=6$
- **D.** $(5x+6)^2=3$

Solve the equation found in the previous step. The solution set is $\{\ \}$.
(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

52. Solve the equation by the zero-factor property.

$c^2-12c+27=0$

The solution set is $\{\ \}$.
(Use a comma to separate answers as needed.)

53. Solve the given equation by the zero-factor property.

$x^2-144=0$

The solution set is $\{\ \}$.
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

54. Solve the equation by the square root property.

$(2x-5)^2=39$

Choose the correct answer below.

- **A.** The solution set is $\left\{\frac{5-\sqrt{39}}{2}\right\}$.
- **B.** The solution set is $\{\pm 17\}$.
- **C.** The solution set is $\left\{\frac{5+\sqrt{39}}{2}\right\}$.
- **D.** The solution set is $\left\{\frac{5\pm\sqrt{39}}{2}\right\}$.

55. Solve the equation by the square root property.

$(z+7)^2=-16$

The solution set is $\{\ \}$.
(Simplify your answer. Use a comma to separate answers as needed.)

56. Solve by completing the square.

$x^2+4x-21=0$

The solution set is $\{\ \}$.
(Simplify your answer. Use a comma to separate answers as needed.)

57. Solve the equation by completing the square.

$6x^2-x-5=0$

The solution set is $\{\ \}$.
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)

58. Solve by completing the square.

$x^2 - 2x - 4 = 0$

The solution set is $\{\ \_\_\_\_\_\ \}$.
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

59. Solve by completing the square.

$-4x^2 + 16x = 19$

The solution set is $\{\ \_\_\_\_\_\ \}$.
(Type an exact answer, using radicals as needed. Express complex numbers in terms of i. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

60. Solve the equation using the quadratic formula.

$r^2 + 3r - 7 = 0$

The solution set is $\{\ \_\_\_\_\_\ \}$.
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

61. Solve the following equation using the quadratic formula.

$-2x^2 = -x + 11$

The solution set is $\{\ \_\_\_\_\_\ \}$.
(Type an exact answer, using radicals as needed. Express complex numbers in terms of i. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

62. Evaluate the discriminant for the following equation. Then use it to determine the number of distinct solutions, and tell whether they are rational, irrational, or nonreal complex numbers.

$x^2 - 6x + 9 = 0$

The discriminant is _____. (Simplify your answer.)

Determine the number of distinct solutions, and tell whether they are rational, irrational, or nonreal complex numbers. Choose the correct answer below.

- **A.** The equation has two distinct rational solutions.
- **B.** The equation has two distinct irrational solutions.
- **C.** The equation has two distinct nonreal complex solutions.
- **D.** The equation has one distinct rational solution, a double solution.

63. Evaluate the discriminant for the following equation. Then use it to determine the number of distinct solutions, and tell whether they are rational, irrational, or nonreal complex numbers.

$5x^2 + 9x + 4 = 0$

The discriminant is _____. (Simplify your answer.)

Determine the number of distinct solutions, and tell whether they are rational, irrational, or nonreal complex numbers. Choose the correct answer below.

- **A.** The equation has two distinct rational solutions.
- **B.** The equation has two distinct nonreal complex solutions.
- **C.** The equation has two distinct irrational solutions.
- **D.** The equation has one distinct rational solution, a double solution.

64. Determine the discriminant of the quadratic equation. Use the value of the discriminant to determine whether the quadratic equation has two rational solutions, two irrational solutions, one repeated real solution, or two complex solutions that are not real.

$3z^2 + 3z + 7 = 0$

discriminant = _____

Determine the number of solution(s) the quadratic equation has.

- **A.** two complex solutions that are not real
- **B.** two irrational solutions
- **C.** one repeated real solution
- **D.** two rational solutions

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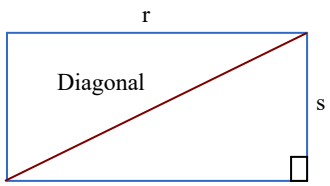
65. If a rectangle is r feet long and s feet wide, which expression represents the length of its diagonal in terms of r and s?



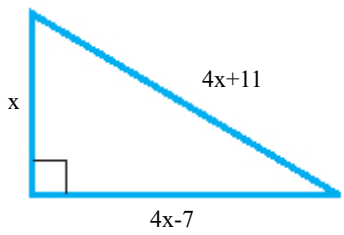
Choose the correct answer below.

- **A.** $\sqrt{r^2 + s^2}$
- **B.** $r + s$
- **C.** $r^2 + s^2$
- **D.** $\sqrt{rs}$

---

66. To solve for the lengths of the right triangle sides, which equation is correct?

A. $x^2 = (4x - 7)^2 + (4x + 11)^2$
B. $x^2 + (4x + 11)^2 = (4x - 7)^2$
C. $x^2 = (4x - 7)^2 - (4x + 11)^2$
D. $x^2 + (4x - 7)^2 = (4x + 11)^2$



To solve for the lengths of the right triangle sides, equation _____ is correct.
(Type A, B, C, or D.)

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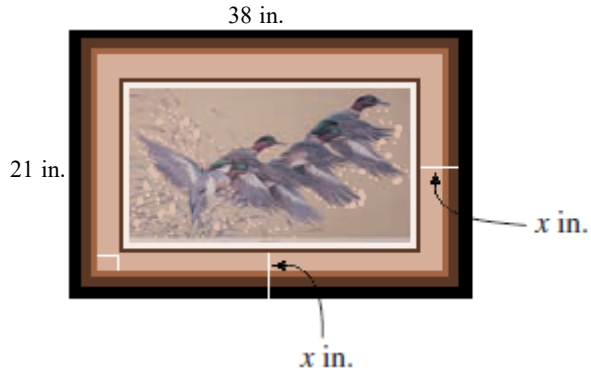
67. The mat and frame around the picture shown measures x inches across. Which equation says that the area of the picture itself is 600 in.^{2}?



Choose the correct answer below.

- **A.** $(38 - 2x)(21 - 2x) = 600$
- **B.** $x(38)(21) = 600$
- **C.** $2(38 - 2x) + 2(21 - 2x) = 600$
- **D.** $(38 - x)(21 - x) = 600$

68. If a projectile is launched vertically upward from the ground with an initial velocity of 90 ft per sec, neglecting air resistance, its height s (in feet) above the ground t seconds after projection is given by $s = -16t^2 + 90t$. Which equation should be used to determine the time at which the height of the projectile reaches 40 ft?

Choose the correct answer below.

- **A.** $s = -16(40)^2 + 90$
- **B.** $40 = -16t^2$
- **C.** $s = -16(40)^2 + 90(40)$
- **D.** $40 = -16t^2 + 90t$

69. If a projectile is launched vertically upward from the ground with an initial velocity of 95 ft per sec, neglecting air resistance, its height s (in feet) above the ground t seconds after projection is given by $s = -16t^2 + 95t$. Which equation should be used to determine the height of the projectile reaches after 3 sec?

Choose the correct answer below.

- **A.** $3 = -16t^2$
- **B.** $3 = -16t^2 + 95t$
- **C.** $s = -16(3)^2 + 95$
- **D.** $s = -16(3)^2 + 95(3)$

70. Match the given equation with the correct first step for solving it.

$$\frac{2x+7}{x}+\frac{7}{x+7}=10$$

Choose the correct answer below.

- **A.** Square each side of the equation.
- **B.** Cube each side of the equation.
- **C.** Raise each side of the equation to the power $\frac{2}{7}$.
- **D.** Multiply each side of the equation by $x(x+7)$.
- **E.** Let $u=(x+7)^{\frac{1}{3}}$ and $u^2=(x+7)^{\frac{2}{3}}$.

71. Match the given equation with the correct first step for solving it.

$$\sqrt{x+3}=9$$

Choose the correct answer below.

- **A.** Square each side of the equation.
- **B.** Cube each side of the equation.
- **C.** Multiply each side of the equation by $x(x+3)$.
- **D.** Let $u=(x+3)^{\frac{1}{3}}$ and $u^2=(x+3)^{\frac{2}{3}}$.
- **E.** Raise each side of the equation to the power $\frac{2}{3}$.

72. Match the given equation with the correct first step for solving it.

$$(x+9)^{\frac{7}{2}}=128$$

Choose the correct answer below.

- **A.** Raise each side of the equation to the power $\frac{2}{7}$.
- **B.** Multiply each side of the equation by $x(x+9)$.
- **C.** Let $u=(x+9)^{\frac{1}{3}}$ and $u^2=(x+9)^{\frac{2}{3}}$.
- **D.** Cube each side of the equation.
- **E.** Square each side of the equation.

73. Match the given equation with the correct first step for solving it.

$$(x+7)^{\frac{2}{3}} - (x+7)^{\frac{1}{3}} - 12 = 0$$

Choose the correct answer below.

- **A.** Cube each side of the equation.
- **B.** Let $u = (x+7)^{\frac{1}{3}}$ and $u^2 = (x+7)^{\frac{2}{3}}$.
- **C.** Multiply each side of the equation by $x(x+7)$.
- **D.** Raise each side of the equation to the power $\frac{2}{3}$.
- **E.** Square each side of the equation.

74. Match the given equation with the correct first step for solving it.

$$\sqrt[3]{x(x+3)} = \sqrt[3]{-8}$$

Choose the correct answer below.

- **A.** Square each side of the equation.
- **B.** Let $u = (x+3)^{\frac{1}{5}}$ and $u^2 = (x+3)^{\frac{2}{5}}$.
- **C.** Multiply each side of the equation by $x(x+3)$.
- **D.** Cube each side of the equation.
- **E.** Raise each side of the equation to the power $\frac{2}{5}$.

75. Decide what values of the variable cannot possibly be solutions for the equation. Do not solve.

$$\frac{1}{x-3} + \frac{1}{x+4} = \frac{1}{x^2+x-12}$$

What values of x cannot be solutions of the equation?

_____ (Use a comma to separate answers as needed.)

76. Solve the equation.

$$\frac{2x+3}{2} - \frac{3x}{x-3} = x$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is $\{$ _____ $\}$.
  (Simplify your answer. Use a comma to separate answers as needed.)
- **B.** The solution is the empty set.

77. Solve the equation.

$\sqrt{5x} - x + 10 = 0$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is $\{\ \}$.
  (Simplify your answer. Type an integer or a fraction. U
- **B.** There is no solution.

78. Solve and check the given equation with rational exponents.

$x^{3/2} = 125$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- **A.** The solution set is $\{\ \}$. (Use a comma to separate answers as needed.)
- **B.** There is no solution.

79. Solve the equation.

$(x^2 + 6x)^{1/4} = 2$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is $\{\ \}$.
  (Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- **B.** There is no solution.

80. Solve the equation.

$x^4 - 5x^2 - 66 = 0$

The solution set is $\{\ \}$.
(Simplify your answer. Use commas to separate answers as needed. Type exact answers, using radicals as needed. Express complex numbers in terms of i.)

81. Match the inequality, $x < -8$, with its equivalent interval notation.

Choose the correct answer below.

- **A.** $(-\infty, -8]$
- **C.** $(-\infty, 8]$
- **E.** $(-\infty, -8) \cup (-8, \infty)$
- **G.** $[-3, 8)$
- **I.** $[-8, \infty)$

82. Match the inequality, $x \leq 9$, with its equivalent interval notation.

Choose the correct answer below.

- **A.** $(-5,9]$
- **C.** $(-\infty,\infty)$
- **E.** $(-\infty,-9)$
- **G.** $(0,9)$
- **I.** $[-5,9)$

83. Match the inequality, $-2 < x \leq 6$, with its equivalent interval notation.

Choose the correct answer below.

- **A.** $(-\infty,-8) \cup (6,\infty)$
- **C.** $(-\infty,\infty)$
- **E.** $(-2,6]$
- **G.** $(-\infty,-6)$
- **I.** $[-6,\infty)$

84. Match the inequality, $x^2 \geq 0$, with its equivalent interval notation.

Choose the correct answer below.

- **A.** $(0,0)$
- **C.** $[-7,-14)$
- **E.** $(-\infty,-14]$
- **G.** $(-\infty,14) \cup (14,\infty)$
- **I.** $(-\infty,14)$

85. Match the inequality, $x \geq -7$, with its equivalent interval notation.

Choose the correct answer below.

- **A.** $(-\infty,\infty)$
- **C.** $(-3,7]$
- **E.** $[-3,7)$
- **G.** $[7,\infty)$
- **I.** $(-\infty,-7)$

86. Match the inequality, $4 \leq x$, with its equivalent interval notation.

Choose the correct answer below.

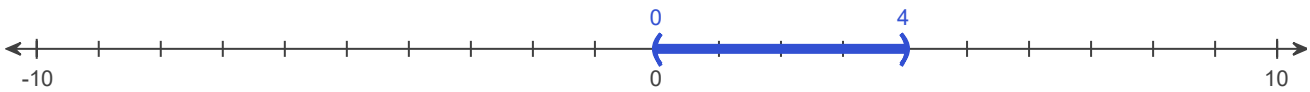
- **A.** $(-\infty,-4]$
- **C.** $[-4,\infty)$
- **E.** $(-\infty,\infty)$
- **G.** $[4,\infty)$
- **I.** $(-\infty,4]$

87. Match the number line with its equivalent interval notation.

Choose the correct answer below.

- **A.** $[1,\infty)$
- **C.** $[-4,1)$
- **E.** $(-\infty,1]$
- **G.** $(-\infty,-4)\cup(1,\infty)$
- **I.** $(-4,1]$

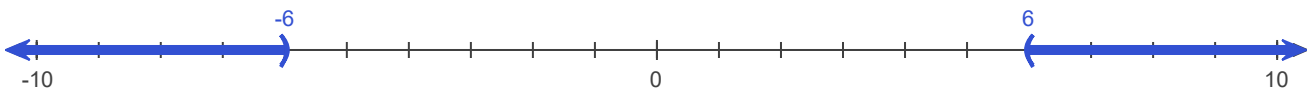
88. Match the number line with its equivalent interval notation.



Choose the correct answer below.

- **A.** $(-\infty,\infty)$
- **C.** $[4,\infty)$
- **E.** $(0,4)$
- **G.** $(-\infty,-6)\cup(4,\infty)$
- **I.** $(-\infty,4)$

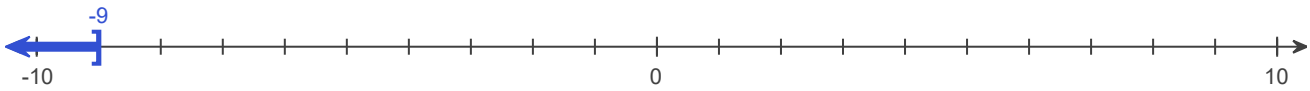
89. Match the number line with its equivalent interval notation.



Choose the correct answer below.

- **A.** $[-5,-6)$
- **C.** $(-\infty,6]$
- **E.** $(-\infty,6)$
- **G.** $(6,-6]$
- **I.** $(0,-6)$

90. Match the number line with its equivalent interval notation.



Choose the correct answer below.

- **A.** $(-\infty, -9)$
- **C.** $[-2, 9)$
- **E.** $[-9, \infty)$
- **G.** $(0, -9)$
- **I.** $(-2, 9]$

---

91. Solve the inequality. Write the solution set in interval notation.

$$-6x + 7 \leq 25$$

The solution set is _____.
(Use integers or decimals for any numbers in the expression.)

---

92. The cost to produce x units of wire is $C = 10x + 400$, while the revenue is $R = 20x$. Find all intervals where the product will at least break even.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The inequality in interval notation is _____.
- **B.** The product will never break even.

---

93. Solve the inequality. Give the solution set in interval notation.

$$-7 < 3 + 2x < 11$$

The solution set in interval notation is _____.
(Simplify your answer. Type your answer in interval notation.)

---

94. Solve the quadratic inequality. Write the solution set in interval notation.

$$x^2 - 2x - 8 > 0$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is _____.
  (Use integers or fractions for any numbers in the expression.)
- **B.** The solution set is the empty set.

---

95. Which of the given inequalities has the solution set $(-\infty,\infty)$?

Choose the correct answer below.

- **A.** $(5x-6)^2 \le 0$
- **B.** $(x-3)^2 \ge 0$
- **C.** $(6x-4)^2 > 0$
- **D.** $(8x+7)^2 < 0$

96. Solve the inequality.

$$\frac{x-1}{x+4} \le 0$$

The solution to the inequality is _____.
(Type your answer in interval notation.)

97. Solve the rational inequality. Write each solution set in interval notation.

$$\frac{10x-17}{x^2+1} \ge 0$$

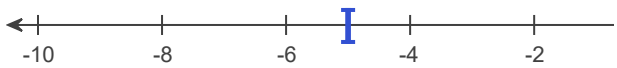
The solution set in interval notation is _____.
(Simplify your answer. Use integers or fractions for any numbers in the expression.)

98. Graph the solution set of the equation.

$|x| = 5$

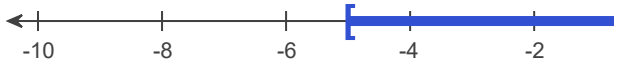
Choose the correct graph of the solution set.

- **A.**



- **B.**

- **C.**



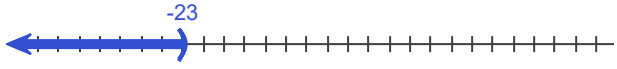
99. Match the following equation with the graph of its solution set.

$|x| = -23$

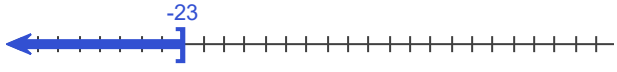
Choose the correct graph below.

- **A.**

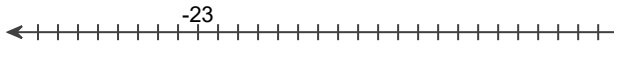
- **B.**



- **C.**



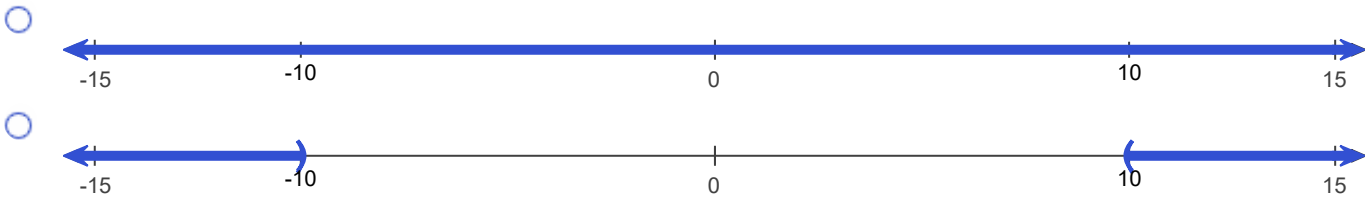
- **D.**



100. Graph the inequality.

$|x| > -10$

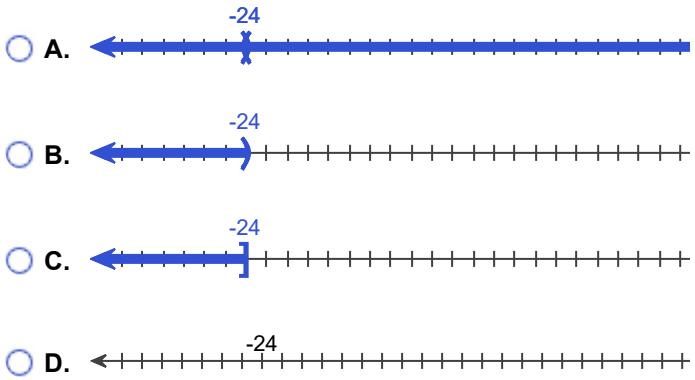
Choose the correct answer.



101. Match the following equation with the graph of its solution set.

$|x| > 24$

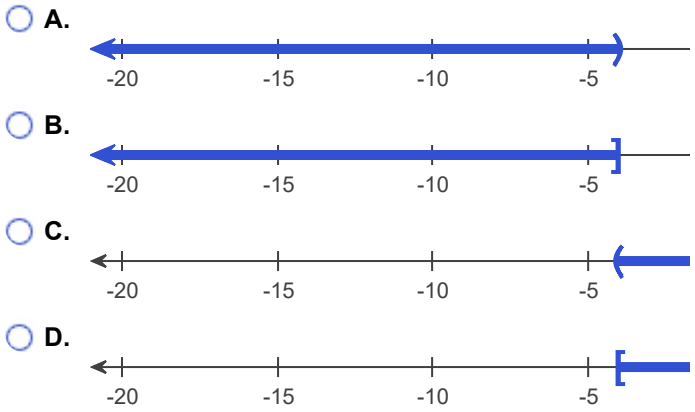
Choose the correct graph below.



102. Solve the following inequality, and graph the solution set.

$|x| < 4$

Choose the correct graph.

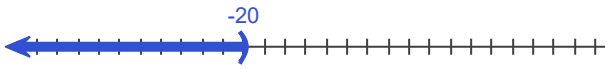


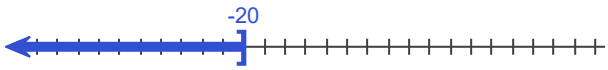
103. Match the following equation with the graph of its solution set.

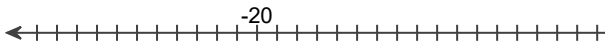
$|x| \geq 20$

Choose the correct graph below.

A. 

B. 

C. 

D. 

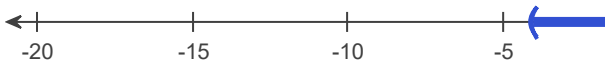
104. Graph the solution set of the inequality.

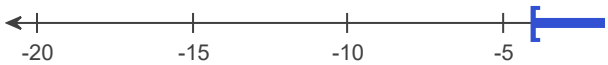
$|x| \leq 4$

Choose the graph of the solution set.

A. 

B. 

C. 

D. 

105. Match the following equation with the graph of its solution set.

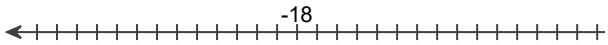
$|x| \neq 18$

Choose the correct graph below.

A. 

B. 

C. 

D. 

106. Solve the equation.

$|4x - 1| = 2$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The solution set is { }.
(Simplify your answer. Type an integer or a fraction.

B. The solution is all real numbers.

C. The solution is the empty set.

107. Solve the inequality.

$|2x + 7| < 5$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is _____.
  (Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expre
- **B.** The solution set is ∅.

108. Solve the inequality.

$|2y - 7| \geq 14$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The solution set is _____.
  (Simplify your answer. Type your answer in interval r
- **B.** The solution set is ∅.

109. Write the statement as an absolute value equation or inequality.

t is no more than 9 units from 1

The statement written as an absolute value inequality is _____.
(Type an inequality.)

110. Write the statement as an absolute value equation or inequality.

r is no less than 5 units from 26

The answer is $|$ _____ $|$ (1) _____ _____.

(1) ≥ = > < ≤