Algebra & Basic Geometry Review

Solve each equation.
1. \(x + 6 = 17\)
2. \(2x = 14\)
3. \(5x = 35\)
4. \(3x + 5 = 20\)
5. \(12x + 5 = 21\)
6. \(4x - 3 = 2x + 9\)
7. \(2(3x - 5) = 4x + 4\)
8. \(3x + 5 = 6\)

Write an equation and then solve your equation to find the number.
9. Two times what number is thirty-six? Find the number.
10. What number divided by three is one? Find the number.
11. The product of a number and 25 is 100. Find the number.
12. Fifty-two is 12.5\% of what number? Find the number.

Solve.
13. \(|x + 5| = 8\)

Solve the system of equations.
14. 
   \[-x + y = 1\]
   \[2x + y = -2\]

15. 
   \[3x - 2y = 19\]
   \[x + y = 8\]

16. 
   \[y = -3x\]
   \[x - 6y = 38\]
17. \( s = t + 4 \)
2t + s = 19

Solve the inequality.
18. \( 3x + 7 < -2 \)
19. \( -4x \leq 8 \)
20. \( 2x + 5 > 3 \)

Find the slope of the line passing through each set of points. Then graph the line.
21. \((2,5), (4,6)\)

\[
\begin{array}{c}
\text{Graph here}
\end{array}
\]

22. \((-3,-2), (-5,-8)\)

\[
\begin{array}{c}
\text{Graph here}
\end{array}
\]

23. \((2,-4), (5,-4)\)

\[
\begin{array}{c}
\text{Graph here}
\end{array}
\]

24. \((6,1), (6,-5)\)

\[
\begin{array}{c}
\text{Graph here}
\end{array}
\]
Find the slope and y-intercept of each line. Then graph the line.

25. \( y = \frac{3}{2}x + 5 \)
26. \( 5x + 2y = 4 \)
27. \( y = -2x + 7 \)

Find the distance and midpoint between each set of points.

28. \((-4,3), (2,11)\)
29. \((-1,-5), (4,7)\)

Solve by factoring.

30. \( x^2 - 2x - 8 = 0 \)
31. \( x^2 - 25 = 0 \)
32. \( x^2 + 8x + 15 = 0 \)

Simplify each radical. Do not write your answer as a decimal.

33. \( \sqrt{144} \)
34. \( \sqrt{18} \)
35. \( \sqrt{32} \)
36. \( \sqrt{72} \)

For each term give a definition in your own words and sketch a picture.

<table>
<thead>
<tr>
<th>37. point</th>
<th>38. line</th>
<th>39. line segment</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Question</td>
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<tr>
<td>40. ray</td>
<td>41. acute angle</td>
<td>42. right angle</td>
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<td>43. obtuse angle</td>
<td>44. straight angle</td>
<td>45. complementary angles</td>
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<td>46. supplementary angles</td>
<td>47. parallel lines</td>
<td>48. perpendicular lines</td>
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**Formulas for area and perimeter.**

<table>
<thead>
<tr>
<th>Shape</th>
<th>Perimeter</th>
<th>Area</th>
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</thead>
<tbody>
<tr>
<td>Rectangle</td>
<td>$P = 2b + 2h$</td>
<td>$A = bh$</td>
</tr>
<tr>
<td>Square</td>
<td>$P = 4s$</td>
<td>$A = s^2$</td>
</tr>
<tr>
<td>Triangle</td>
<td>$P = s_1 + s_2 + s_3$</td>
<td>$A = \frac{1}{2}bh$</td>
</tr>
<tr>
<td>Circle</td>
<td>$C = 2\pi r$ or $C = \pi d$</td>
<td>$A = \pi r^2$</td>
</tr>
</tbody>
</table>
Volume

Volume of a cube \( V = s^3 \)

Pythagorean Theorem
\[ c^2 = a^2 + b^2 \]

Find the area and perimeter of each figure.

49. Rectangle

![Rectangle](image)

50. Square

![Square](image)

51. Right Triangle

![Right Triangle](image)

52. Circle

![Circle](image)
53. Find the volume of a cube

![Cube Diagram]

54. Find the value of $x$ and $y$.

![Triangle Diagram]

55. Find the value of $x$.

![Right Triangle Diagram]