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Directions Each problem below is similar to the example with the same number in your textbook. After reading through an example in your textbook, or watching one of the videos of that example on MathTV, try the matched problem to check your progress in this section. You can use the QR code at the right to view the videos for this section on your smart phone or tablet. If your smart device does not have a camera, but can access the Internet, go to m.mathtv.com to view the videos for this worksheet.

1. Translate the English sentence into an algebraic equation or inequality:

a. The sum of x and 5 is less than 30.

b. The product of 6 and y is 72.

c. The quotient of 15 and x is 3.

d. Twice the difference of a and 4 is 26.

e. The difference of twice a and 4 is 26.

2. Simplify $6+4(5+7)$.

3. Simplify $36-14\div2+4$.

4. Simplify $(-3-6)(2-4)$.

5. Simplify $4-3(6-1)-7$.

6. Simplify $5(3-5)^3+3(-7-2)^2$.

7. Simplify $\dfrac{-9-3}{-2-4}$.

8. Simplify $\dfrac{6(-3)-2(7-5)}{3(-3)-2}$.

9. Multiply $4\left(\dfrac{1}{4}x-3\right)$.
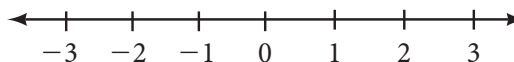
10. Find the value of $3x-8y$ when

a. $x=-1$ and $y=3$.

b. $x=2$ and $y=-4$.

c. $x=3$.

11. Locate the following numbers on the real number line:

$-3.2,\ -0.5,\ \dfrac{3}{4},\ \sqrt{3},$ and 2.1

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12. Write $\left|4\right|$ without absolute value signs.

13. Write $\left|-3\right|$ without absolute value signs.

14. Write $-\left|-6\right|$ without absolute value signs.

15. Simplify $7(6x)$.

16. Simplify $\dfrac{1}{8}(8x)$.

17. Apply the distributive property to $\dfrac{1}{4}(8x+4)$.

18. Simplify $4(3x-5)+3$.

19. Multiply $x\left(4+\dfrac{3}{x}\right)$.

20. Multiply $12\left(\dfrac{x}{6}+\dfrac{y}{3}\right)$.

21. Combine similar terms: $8x+3x$.

22. Combine similar terms: $3y+11y$.

23. Simplify $6x+5+3x+8$.

24. Simplify $7+2(4y+8)+5y$.

25. Simplify $2(3y-7)+8y$.

26. Simplify $7-2(3x-5)+8x$.

27. Simplify $4(2a+3)-(6a+5)$.

28. Find $\{1,\,3,\,5\}\cup\{5,\,7,\,9\}$.

29. Find $\{1,\,3,\,5\}\cap\{5,\,7,\,9\}$.

30. Find $\{1,\,2,\,3,\,4,\,5\}\cup\{2,\,4,\,6,\,8\}$.

31. Find $\{1,\,2,\,3,\,4,\,5\}\cap\{1,\,3,\,5\}$.

32. For the following set, list the numbers that are (a) whole numbers, (b) integers, (c) rational numbers, (d) irrational numbers, and (e) real numbers: $\left\{-3,\,-2.1,\,\dfrac{1}{4},\,\sqrt{2},\,\sqrt{7},\,5\right\}$.

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Answers

1. a. $x+5<30$ **b.** $6y=72$ **c.** $\dfrac{15}{x}=3$ **d.** $2(a-4)=26$ **e.** $2a-4=26$ **2.** 54   **3.** 33   **4.** 18

5. −18   **6.** 203   **7.** 2   **8.** 2   **9.** $x-12$ **10. a.** −27 **b.** 38 **c.** $9-8y$
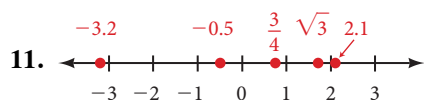
11.   **12.** 4   **13.** 3   **14.** −6   **15.** $42x$ **16.** x

17. $2x+1$ **18.** $12x-17$ **19.** $4x+3$ **20.** $2x+4y$ **21.** $11x$ **22.** $14y$ **23.** $9x+13$ **24.** $13y+23$

25. $14y-14$ **26.** $2x+17$ **27.** $2a+7$ **28.** $\{1,\ 3,\ 5,\ 7,\ 9\}$ **29.** $\{5\}$ **30.** $\{1,\ 2,\ 3,\ 4,\ 5,\ 6,\ 8\}$

31. $\{1,\ 3,\ 5\}$ **32. a.** 5 **b.** −3,5 **c.** $-3,-2.1,\dfrac{1}{4},5$ **d.** $\sqrt{2},\sqrt{7}$ **e.** all numbers in set are real numbers