



ST. FRANCIS  
DE SALES  
CATHOLIC SCHOOL

**Summer Math Packet**  
**For**  
**Students entering 8th grade Algebra II**

Please have your student complete this packet and return it the first day of school next fall.

- The packet must be hole-punched and put into a 3-clasped folder.
- The student name must be written on the front of the folder.
- ALL WORK MUST BE SHOWN FOR FULL CREDIT. (Extra paper may be used for work.)
- Packets are due on September 5. (Each day the packet is late will result in a 10% deduction from the grade.)
- The packet will be graded and will count as a quiz grade.
- No packets will be accepted after Friday, September 8.



Topic 1 Review: Expressions, Equations, and Inequalities

Evaluate each expression for  $x = 5$ .

1.  $\frac{5}{3}(3x - 6) - (6 - 4x)$

2.  $3(x^2 - 4) + 7(x - 2)$

3.  $x - 2x + 3x - 4x + 5x$

Simplify each expression.

4.  $a^2 + a + a^2$

5.  $2x + 3y - 5x + 2y$

6.  $5(a - 2b) - 3(a - 2b)$

7.  $3[2(x - 3) + 2] + 5(x - 3)$

Solve each equation.

8.  $4y - 6 = 2y + 8$

9.  $3(2z + 1) = 35$

10.  $5(3w - 2) - 7 = 23$

11.  $t - 2(3 - 2t) = 2t + 9$

12.  $5(s - 12) - 24 = 3(s + 2)$

13. The lateral surface area of a cylinder is given by the formula  $S = 2\pi rh$ . Solve the equation for  $r$ .
14. **Savings** Briana and her sister Molly both want to buy the same model bicycle. Briana needs \$73 more before she can afford the bike. Molly needs \$65 more. If they combine their money, they will have just enough to buy one bicycle that they could share. What is the cost of the bicycle?
15. **Musical** There is only one freshman in the cast of a high school musical. There are 6 sophomores and 11 juniors. One third of the cast are seniors. How many seniors are in the musical?

Determine whether each equation is *always*, *sometimes*, or *never* true.

16.  $2x + 7 - x = 3 + x + 4$

17.  $5a - 1 - 3a = 2a + 1$

Solve each equation or inequality. Graph the solution.

18.  $3x + 17 \geq 5$

19.  $25 - 2x < 11$

20.  $\frac{3}{8}x < -6$  or  $5x > 2$

21.  $2 < 10 - 4d < 6$

22.  $4 - x = |2 - 3x|$

23.  $5|3w + 2| - 3 > 7$

24.

**Reasoning** Justify each step by identifying the property used.

$$\begin{aligned}t + 5(t + 1) &= t + (5t + 5) \\ &= (t + 5t) + 5 \\ &= (1t + 5t) + 5 \\ &= (1 + 5)t + 5 \\ &= 6t + 5\end{aligned}$$

**Topic 2 Review: Functions, Equations, and Graphs**

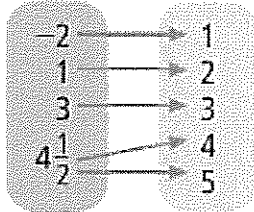
Find the domain and range. Graph each relation.

1.  $\{(0, 0), (1, -1), (2, -4), (3, -9), (4, -16)\}$

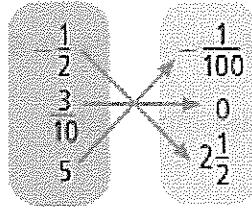
2.  $\{(3, 2), (4, 3), (5, 4), (6, 5), (7, 6)\}$

Determine whether each relation is a function.

3. Domain      Range



4. Domain      Range

Suppose  $f(x) = 2x - 5$  and  $g(x) = |-3x - 1|$ .

Find each value.

5.  $f(3)$

6.  $f(1) + g(2)$

7.  $g(0)$

8.  $g(2) - f(0)$

9.  $f(-1) - g(3)$

10.  $2g(-4)$

Find the slope of each line.

11. through  $(3, 5)$ , parallel to  $y = 5x - 1$

12. through  $(-0.5, 0.5)$ , perpendicular to  $y = -2x - 4$

Write an equation of the line in standard form with the given slope through the given point.

13. slope =  $-3$ ,  $(0, 0)$

14. slope =  $\frac{2}{5}$ ,  $(6, 7)$

15. slope =  $4$ ,  $(-2, -5)$

16. slope =  $-0.5$ ,  $(0, 6)$

Write an equation of the line in point-slope form through each pair of points.

17.  $(0, 0)$  and  $(-4, 7)$

18.  $(-1, -6)$  and  $(-2, 10)$

19.  $(3, 0)$  and  $(-1, -2)$

20.  $(9, 5)$  and  $(8, 2)$

For each direct variation, find the constant of variation. Then find the value of  $y$  when  $x = -0.5$ .

21.  $y = 4$  when  $x = 0.5$

22.  $y = 2$  when  $x = 3$

Write an equation of the line with the given slope and  $y$ -intercept. Use slope-intercept form. Then rewrite each equation in standard form.

23.  $m = 3$ ,  $b = -7$

24.  $m = -6$ ,  $b = 9$

25.  $m = \frac{1}{4}$ ,  $b = 11$

26.  $m = -\frac{1}{2}$ ,  $b = 4$

Graph each inequality.

27.  $y \geq x + 7$

28.  $y > 2|x + 3| - 3$

29.  $4x - 3y < 2$

30.  $y \leq -\frac{1}{2}|x + 2| - 3$