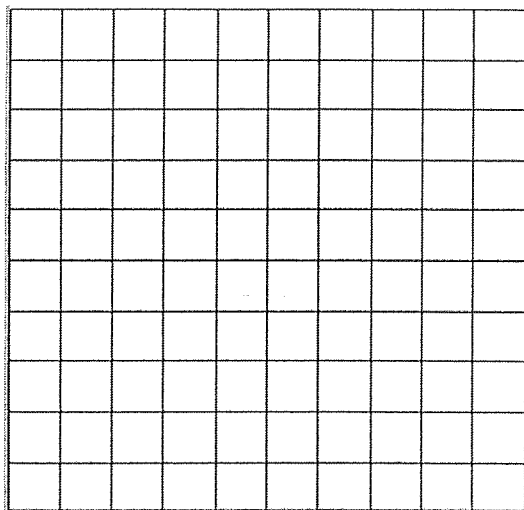


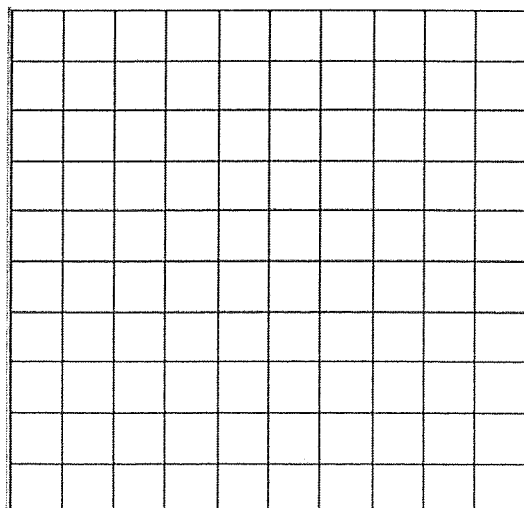
Name _____

Piecewise Functions Worksheet
Algebra I

1. A plumber charges \$25 dollars per hour for labor. Regardless of how much of that hour is worked, the charge remains at \$25. So, for example, if he works any amount under an hour, his price is \$25. If he goes a second over an hour, the cost goes up to \$50 and remains there for that hour. If he works a second over two hours, the price goes up again \$25. Diagram a step function to represent his cost for up to eight hours.



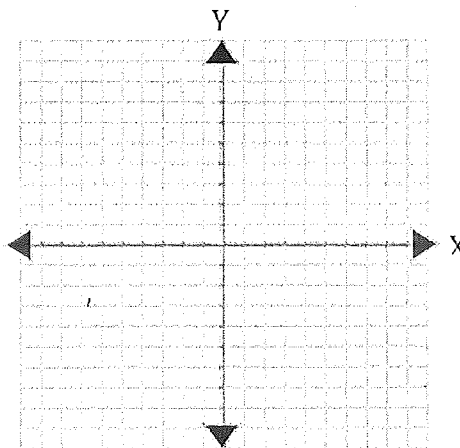
2. A wholesale t-shirt manufacturer charges the following prices for t-shirt orders:
\$25 per shirt for shirt orders up to 10 shirts; \$20 per shirt for shirt between 11 and 20 shirts; \$15 per shirt for shirt orders between 21 and 30 shirts; \$10 per shirt for shirt orders over 30 shirts. Diagram this function.



Graph each of the following piecewise functions. Pay attention to the specified domain values.

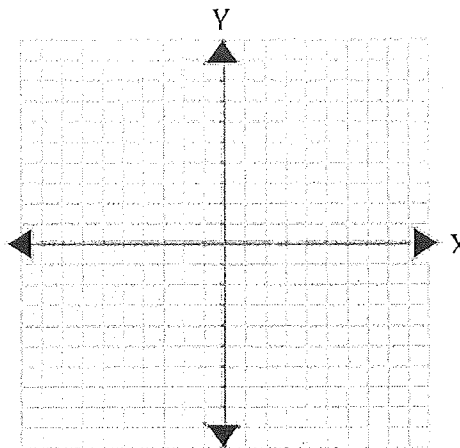
1.

$$f(x) = \begin{cases} x+5 & x < -2 \\ 1 & x \geq -2 \end{cases}$$



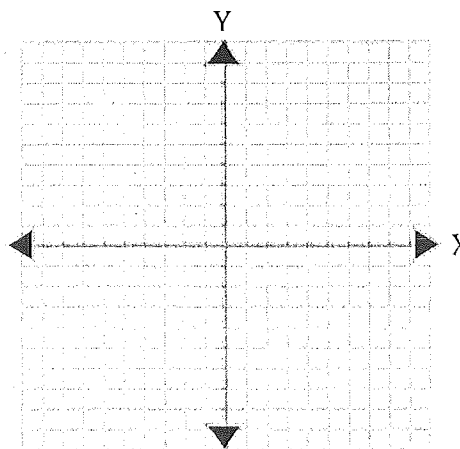
2.

$$f(x) = \begin{cases} -\frac{1}{2}x & x \leq 0 \\ x-1 & x > 0 \end{cases}$$



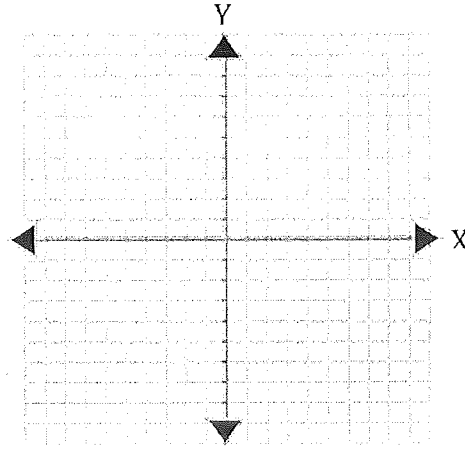
3.

$$f(x) = \begin{cases} x^2 & x < 2 \\ 3x-7 & x \geq -2 \end{cases}$$



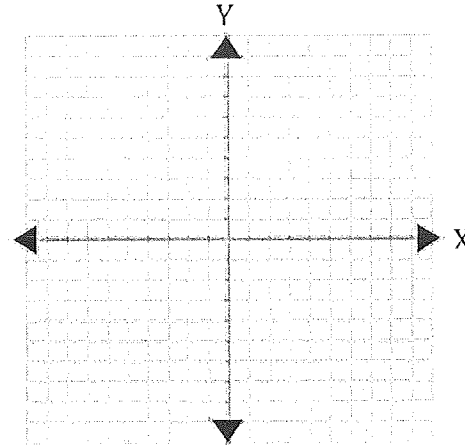
4.

$$f(x) = \begin{cases} -2x + 1 & x \leq 1 \\ 5x - 4 & x > 1 \end{cases}$$



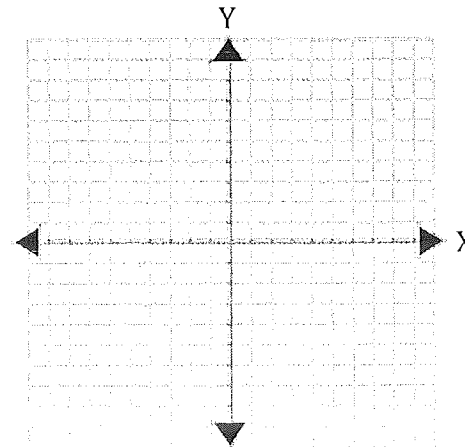
5.

$$f(x) = \begin{cases} x^2 & x \leq 0 \\ -x^2 + 4 & x > 0 \end{cases}$$



6.

$$f(x) = \begin{cases} -x - 5 & x \leq -4 \\ 2 & -4 < x < 1 \\ -2x + 7 & x \geq 1 \end{cases}$$



Inverse Relations

Find the inverse for each relation.

1. $\{(1, -3), (-2, 3), (5, 1), (6, 4)\}$ 2. $\{(-5, 7), (-6, -8), (1, -2), (10, 3)\}$

Finding Inverses

Find an equation for the inverse for each of the following relations.

3. $y = 3x + 2$ 4. $y = -5x - 7$ 5. $y = 12x - 3$
6. $y = -8x + 16$ 7. $y = \frac{2}{3}x - 5$ 8. $y = -\frac{3}{4}x + 5$
9. $y = -\frac{5}{8}x + 10$ 10. $y = \frac{1}{2}x + 8$ 11. $y = x^2 + 5$
12. $y = x^2 - 4$ 13. $y = (x + 3)^2$ 14. $y = (x - 6)^2$
15. $y = \sqrt{x - 2}, y \geq 0$ 16. $y = \sqrt{x + 5}, y \geq 0$ 17. $y = \sqrt{x} + 8, y \geq 8$
18. $y = \sqrt{x} - 7, y \geq -7$