FAMILIES OF FUNCTIONS SORT

Print the graph pages below back-to-back with their equations (page 2 and page 4, page 3 and page 5). Cut them into playing pieces, so you have a graph on one side and an equation on the other.

Have students work in pairs or small groups.

Start by having them sort the function graphs from scatter plots and discuss positive correlation, negative correlation and no correlation.

Review the various functions and draw a generic graph on the board for each category. Have students make the shape of each function family with their arms. Then the students sort by family: cubic, quadratic, linear, absolute value.

When they turn the cards over the can notice the effects of the sign of the slopes, leading coefficient and constant term.

Sort cubic function graphs into positive x^3-coefficients and negative x^3-coefficients.

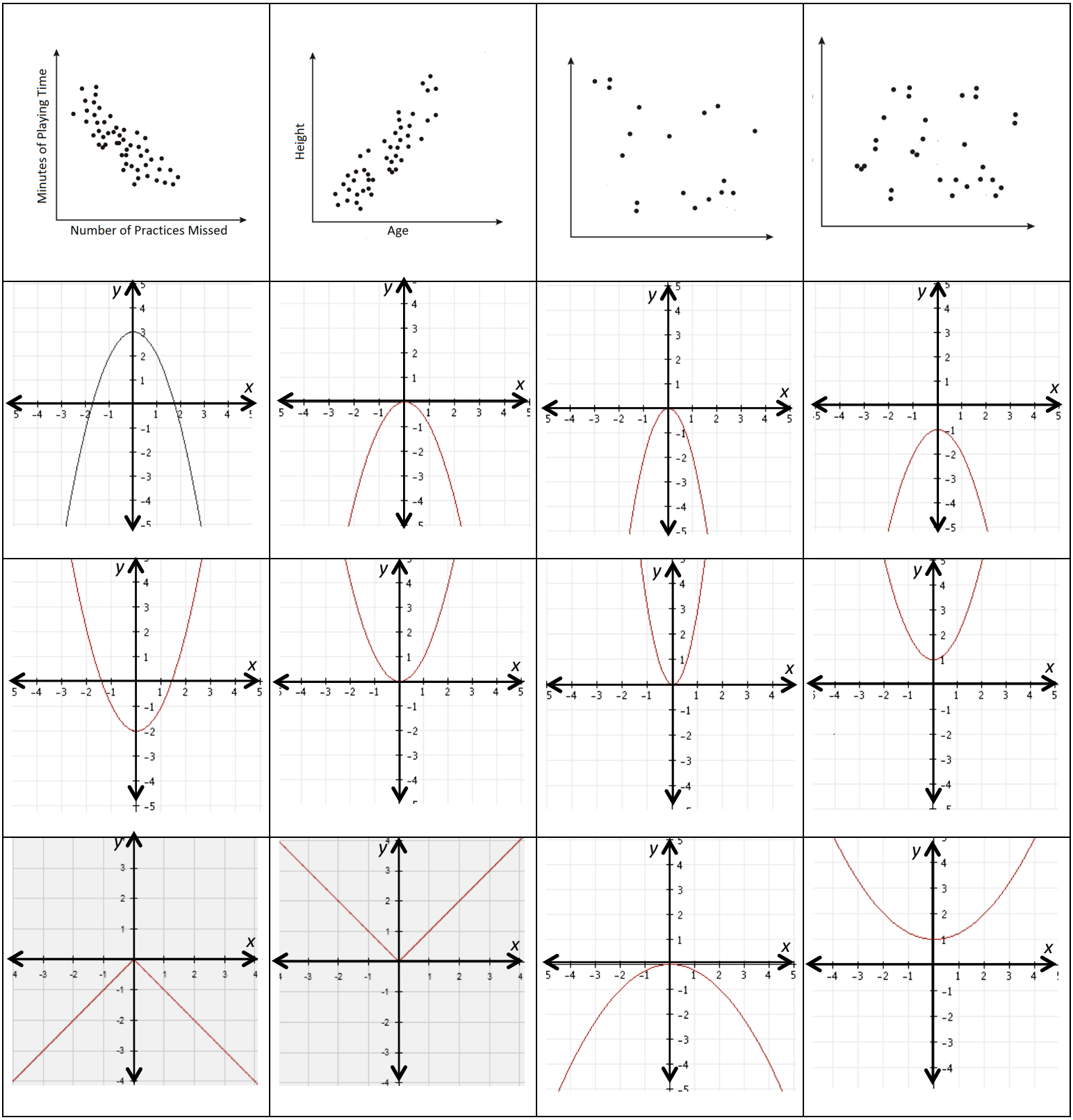
Sort quadratic functions into concave up and concave down. Sort each pile by y-intercept greater/less than or equal to zero.

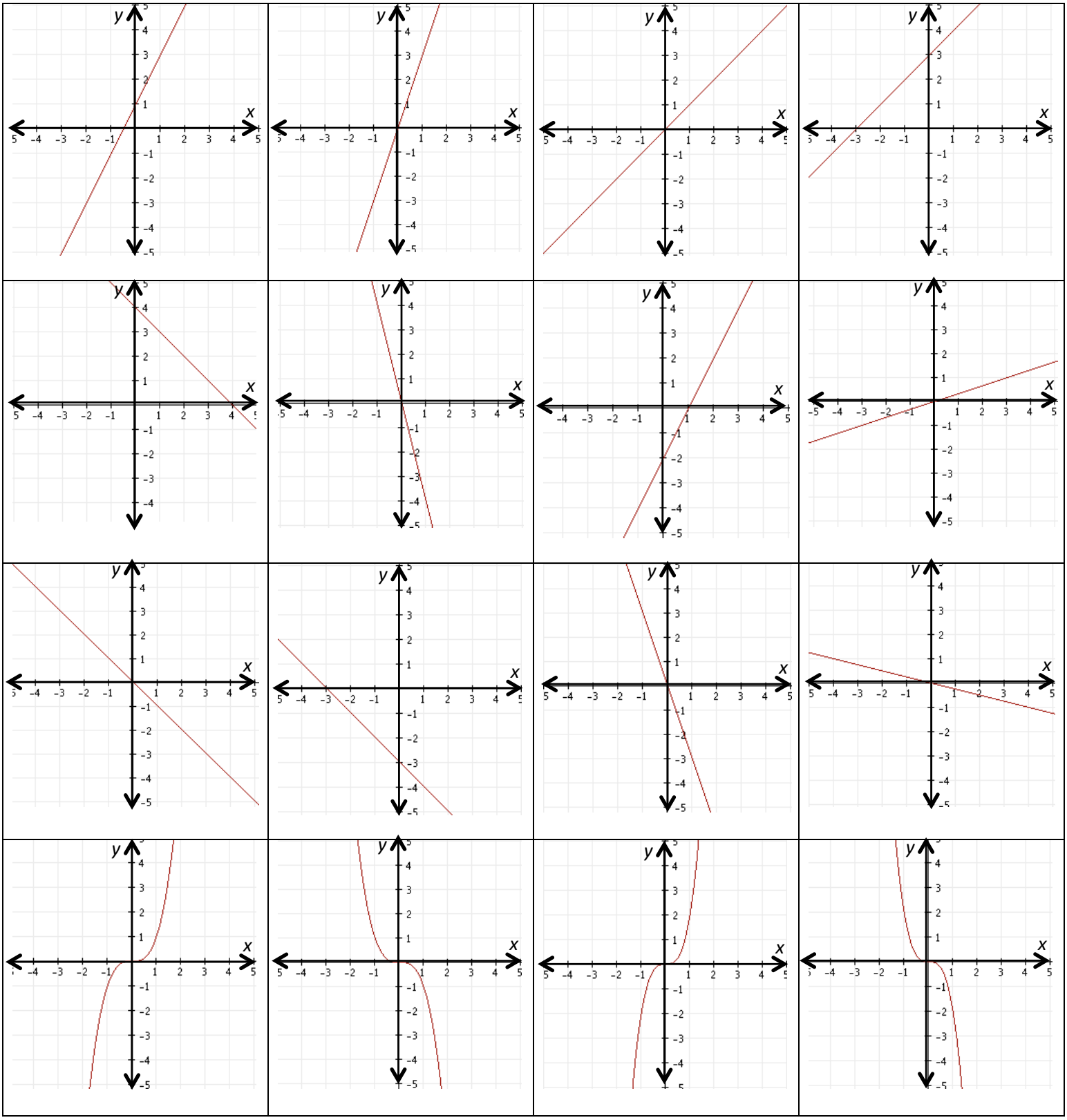
Sort absolute value graphs into open up and open down.

Sort linear function graphs by positive and negative slope. Sort positive slope graphs into greater or less than one. Sort graphs with negative slopes into slopes greater or less than negative one.

Record sheets are provided for 8 of the linear functions (pages 6 and 7).

This activity can be combined with the Families of Functions Content Presentations.

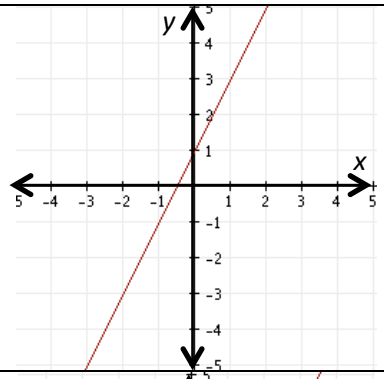
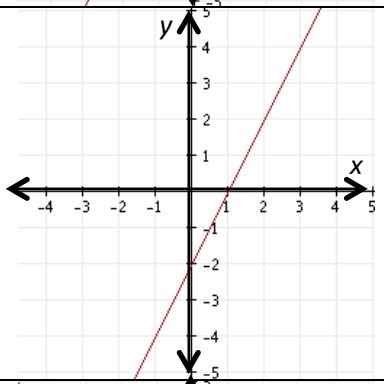
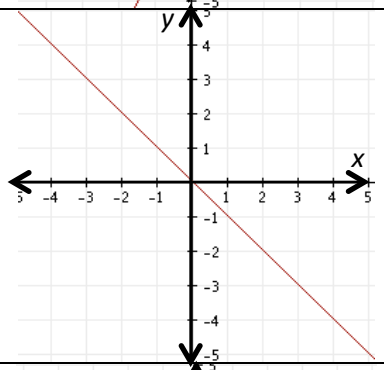
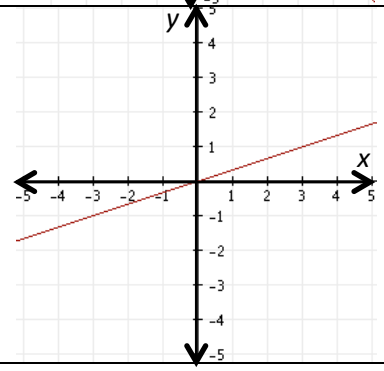

Minutes of Playing Time
Number of Practices Missed
Height
Age



No correlation	No correlation	Positive correlation	Negative correlation
$y=-x^2-1$	$y=-2x^2$	$y=-x^2$	$y=-x^2+3$
$y=x^2+1$	$y=3x^2$	$y=x^2$	$y=x^2-2$
$y=\frac{1}{2}x^2+1$	$y=-\frac{1}{2}x^2$	$y=\lvert x\rvert$	$y=-\lvert x\rvert$

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

Name_____ Period_____

Graph	Equation	Slope and *y*-intercept (0 , __)
		*y*-intercept: (___ , ___) Slope:
		*y*-intercept: (___ , ___) Slope:
		*y*-intercept: (___ , ___) Slope:
		*y*-intercept: (___ , ___) Slope:

How can you tell from the graph whether the slope is positive or negative? _____

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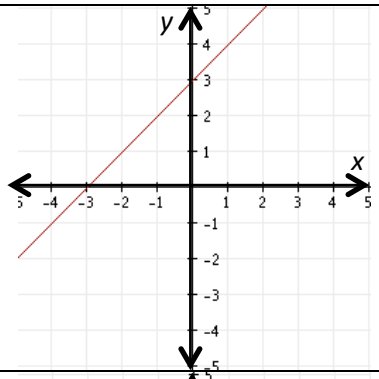
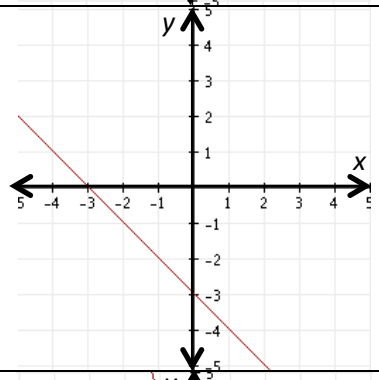
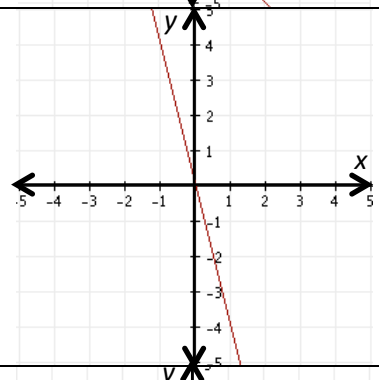
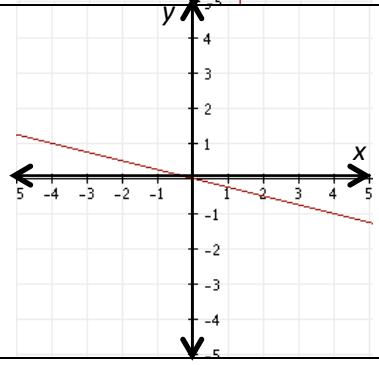
Graph	Equation	Slope and *y*-intercept (0 , __)
		*y*-intercept: (___ , ___) Slope:
		*y*-intercept: (___ , ___) Slope:
		*y*-intercept: (___ , ___) Slope:
		*y*-intercept: (___ , ___) Slope:

Starting from the *y*-intercept, how do you use the slope to find another point on the line? _____

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