Grade 6 Math Circles
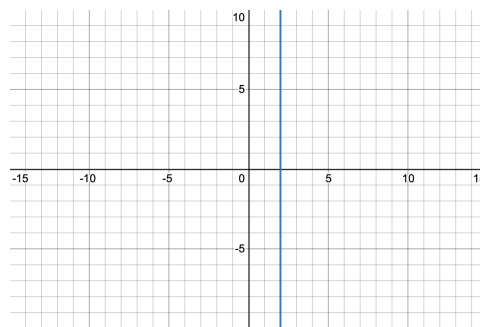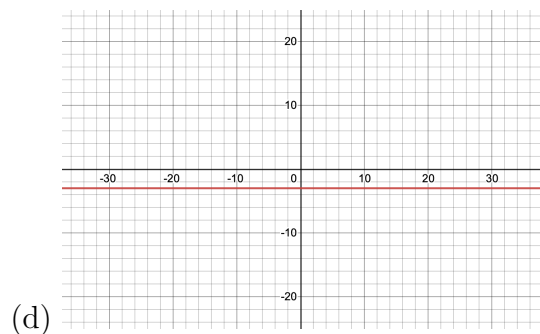## November 3rd, 2021
Linear Relations - Problem Set

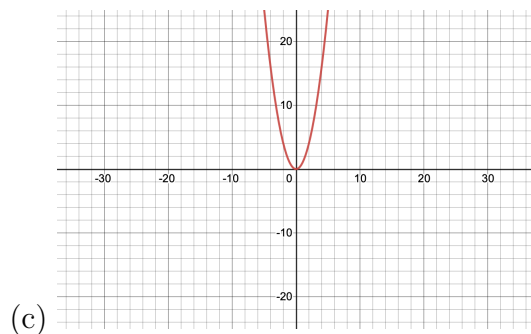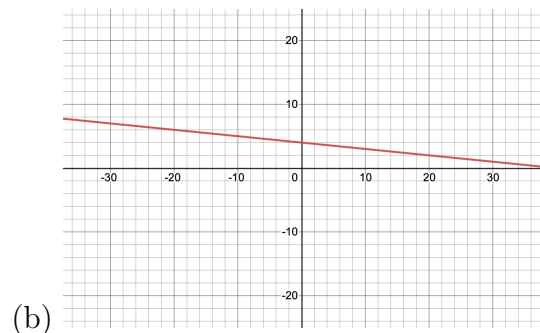1. Complete the table below with the values of x and y from the equation $-2x - 5y = 1$.

x	-3	12		-43			0	
y			7		29	-51		0

2. **TRUE** or **FALSE**. The slope of the following line is 0.

3. Which of the following graphs are linear relations?

(a)

(b)

(c)

(d)
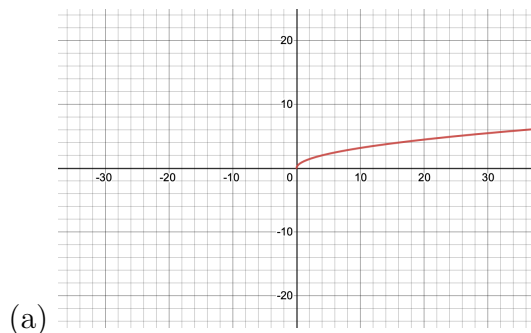
4. What is the equation of the line that passes through the points $(-12, 3)$ and $(81, -59)$? (Hint: calculate the slope first, then the y-intercept).

5. Does the line that passes through the points $(3, 3)$ and $(-32, -11)$ also pass through the point $(249, 101)$?

6. A linear relation has a slope of $-\dfrac{3}{2}$ and contains the point $(8, 0)$. What is the value of y when $x = 0$?

7. If a line has a slope of 2 and passes through the points $(2, 7)$ and $(a, 3a)$, what is the value of a?

8. An unspecified amount of money is deposited into a bank account. Nine days later, the balance in the bank account is \$16075. Twelve days after that, the balance in the bank account is \$20575. Assume this follows a linear relationship.

   (a) What is the daily rate of money being deposited in the bank account?

   (b) What was the initial balance of the bank account?

   (c) What will the balance of the bank account be six weeks after the initial deposit?

   (d) How long after the initial deposit will the balance in the bank account be exactly \$24700?