1. If x is an integer, what is the minimum value of x that satisfies the inequality?

$-7(x - 2) + 1 < x$

$-7x + 14 + 1 < x$

$-7x + 15 < x$

$+7x \quad +7x$

$15 < 8x$

$\frac{15}{8} < \frac{8x}{8}$

$\frac{15}{8} < x$

$x > \frac{15}{8}$

$-7(x-2)+1 < x$

$-7x+14+1 < x$

$-7x+15 < x$

$-15 \quad -15$

$-7x < x-15$

$-x \quad -x$

$-8x < -15$

$\frac{-8x}{-8} < \frac{-15}{-8}$

$x > \frac{15}{8}$

2. Solve the equation $2y + 5x = 16$, for y.

$y = mx + b$

$2y + 5x = 16$

$-5x \quad -5x$

$\frac{2y}{2} = \frac{-5x}{2} + \frac{16}{2}$

$y = -\frac{5}{2}x + 8$

Average Rate of Change → SLOPE

$$\frac{\Delta y}{\Delta x} = \frac{\text{change in y}}{\text{change in x}}$$

All linear equations have a constant rate of change on all intervals.

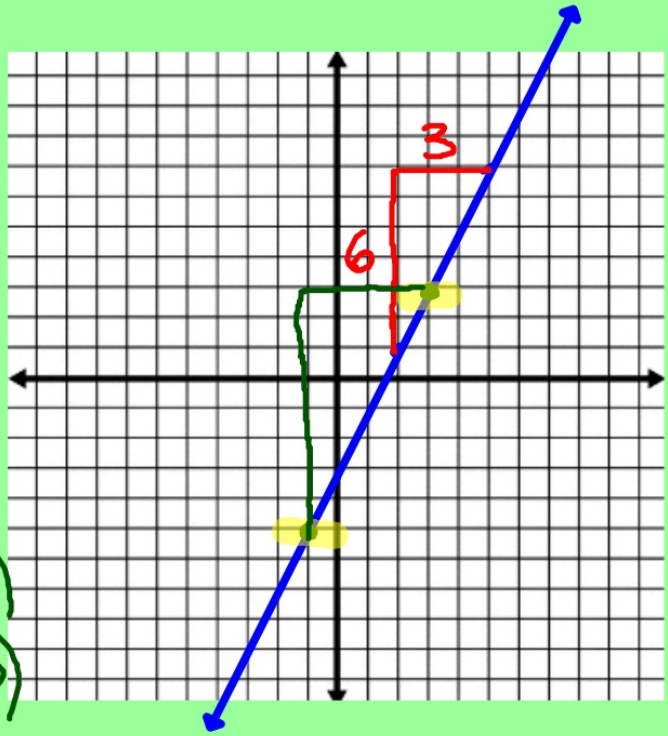
Example: Use the equation f(x)=2x - 3 to find the average rate of change over the intervals.

A. $2 \le x \le 5$

$2(2)-3=1 \quad (2,1)$

$2(5)-3=7 \quad (5,7)$

$m=\frac{6}{3}=2$



B. $-1 \le x \le 3$

$2(-1)-3=-5 \quad (-1,-5)$

$2(3)-3=3 \quad (3,3)$

$m=\frac{8}{4}=2$

From Tables

Use the table of values to find the average rate of change over the given interval

x	1	3.8	4.7	9	13.8	12
y	3	5.1	8.7	15.8	25.1	30.86

A. [1, 9]

(1, 3) (9, 15.8)

$$\frac{15.8-3}{9-1} = \frac{12.8}{8} = \boxed{\frac{8}{5}}$$

B. [9, 12]

(9, 15.8) (12, 30.86)

$$\frac{30.86-15.8}{12-9}$$

$$\boxed{\frac{251}{50}}$$

The table below represents the average price of a movie ticket in the given year.

Year	1987	1991	1995	1999	2003	2007	2009
Price($)	3.91	4.21	4.35	5.00	6.10	6.88	7.50

To the nearest cent, what was the average rate of change of the ticket price between 1991 and 2009?

(1991, 4.21)

(2009, 7.50)

$$\frac{7.50-4.21}{2009-1991}=\frac{3.29}{18}$$

$0.18

The table below shows the population of Texas since 1970.

Year	1970	1980	1990	2000	2010
Population (Millions)	11.2	14.2	17.0	20.9	25.1

+10 +10 +10 +10

+3 +2.8 +3.9 +4.2

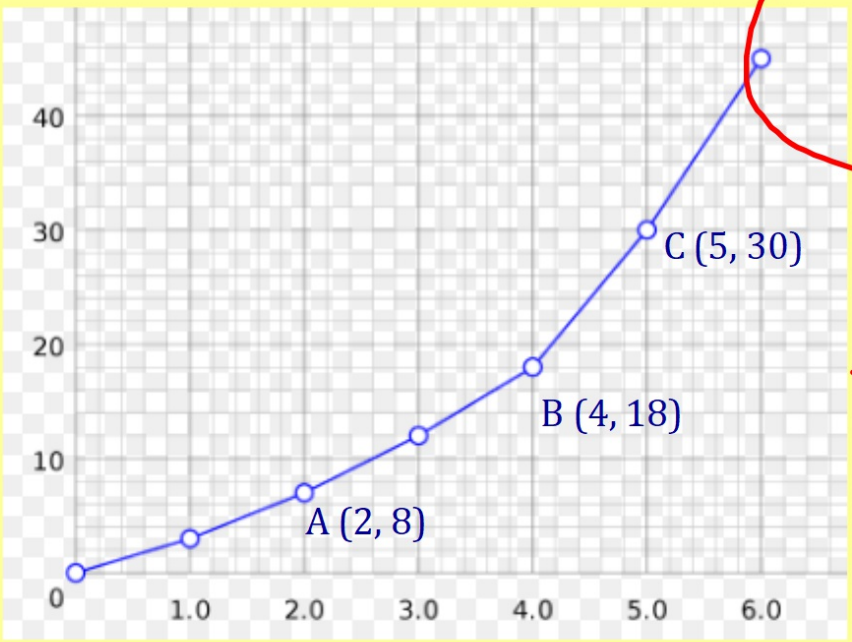
A. Find the average rate of change for each decade.

0.3 0.28 0.39 0.42

B. During which decade was the average rate of change the largest? 2000–2010

From Graphs

Compute the average rate of change from A to B, B to C, and A to C. Which interval has the smallest rate of change?



AB

$\frac{18-8}{4-2} = \frac{10}{2} = 5$

BC

$\frac{30-18}{5-4} = \frac{12}{1} = 12$

AC

$\frac{30-8}{5-2} = \frac{22}{3}$