

Algebra Test Review

$$1 \text{ yd} = 3 \text{ ft}$$
$$1 \text{ mile} = 5,280 \text{ ft}$$
$$1 \text{ lb} = 16 \text{ oz}$$

Conversions

$$\frac{2 \text{ yards}}{\text{hour}} \rightarrow \frac{\text{miles}}{\text{hour}}$$

$$\frac{2 \text{ yards}}{\text{hour}} \cdot \frac{3 \text{ feet}}{1 \text{ yard}} = \frac{6 \text{ feet}}{\text{hour}}$$

$$\frac{22 \text{ oz}}{\text{day}} \rightarrow \frac{\text{lbs}}{\text{week}}$$

$$\frac{22 \text{ oz}}{\text{day}} \cdot \frac{1 \text{ lb}}{16 \text{ oz}} \cdot \frac{7 \text{ days}}{1 \text{ week}} = \frac{154 \text{ lbs}}{16 \text{ weeks}} \approx 9.625 \frac{\text{lbs}}{\text{week}}$$

$$\frac{5 \text{ in}}{\text{sec}} \rightarrow \frac{\text{cm}}{\text{hr}}$$

$$\frac{5 \text{ in}}{\text{sec}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{762 \text{ cm}}{\text{hr}}$$

If Raul traveled 348 miles in 6 hours, what is his average speed per hour?

$$\frac{348 \text{ mi} \div 6}{6 \text{ hr} \div 6} = \frac{58 \text{ mi}}{1 \text{ hr}} \quad 58 \text{ mph}$$

If Liam made 128 chairs in 16 hours for Tech Ed class, how many could he make in 3 hours?

$$\frac{128 \text{ chairs} \div 16}{16 \text{ hours} \div 16} = \frac{8 \text{ chairs}}{\text{hr}} \times \frac{3}{\text{hours}} = 24 \text{ chairs}$$

Percent Change

$$\frac{|\text{original} - \text{new}|}{\text{original}} \times 100 \quad \text{OR} \quad \frac{|\text{new} - \text{original}|}{\text{original}} \times 100$$

original: 15

new: 26

New: 27

original 42

$$\frac{|15 - 27|}{15} = \frac{|-12|}{15} = \frac{12}{15} = .8$$

$$\frac{|42 - 26|}{42} = \frac{16}{42} = .38$$

80% increase

38% decrease

Apple's stock sold for \$98.77 per share at 10 AM, \$100 at 4 PM. what was the percent change?

original: 98.77
new 100

$$\frac{98.77 - 100}{98.77} = \frac{-1.23}{98.77} = -.012$$

1.2% increase

Vineyard Vines keeps changing the price for the blue pants w/ dolphins. A year ago they were 100, six months later \$110, today \$99. What was the average percent change?

* Challenge: change 99 to 129
→ work on next page

* Two versions of the problem
If you left as is

original 100 original 110 $\frac{|110 - 99|}{110} = \frac{11}{110} = +10\%$
new 110 new 99 average $\frac{-10\% + 10\%}{2} = \frac{0}{2} = 0\%$

Level C

Gas prices continually fluctuate. A year ago it was \$4.01/gal, a few months later 3.79, ~~a few months~~ a week later \$3.95 and now 3.70. What is the average percent change?

* work on next page

0% change the increase + decrease cancels out

Vineyard Vines

\$ 100

\$ 110

\$ 129

original: 100

new: 110 ↑

$$\frac{|100 - 110|}{100} = \frac{10}{100} = .1$$

10%
increase

original: 110

new: 129 ↑

$$\frac{|110 - 129|}{110} = \frac{19}{110}$$

= .17

17%
increase

$$\text{Average: } \frac{10 + 17}{2} = \frac{27}{2} = 13.5\% \text{ increase}$$

Level C

Gas prices

O: \$ 4.01 ↓
N: \$ 3.79

O: 3.79 ↑
N: 3.95

O: 3.95 ↓
N: 3.70

$$\frac{|4.01 - 3.79|}{4.01}$$

$$\frac{|3.79 - 3.95|}{3.79}$$

$$\frac{|3.95 - 3.70|}{3.95}$$

$$\frac{.22}{4.01} = .054$$

$$\frac{.16}{3.79} = .042$$

$$\frac{.25}{3.95} = .063$$

5% decrease

4% increase

6% decrease

-5

+4

-6

$$\frac{-5 + 4 - 6}{3} = \frac{-7}{3} = -2.\bar{3}\% \rightarrow 2.\bar{3}\% \text{ decrease}$$

Level C

Apple Stock

August : 98

$$\frac{8}{98} = .081 \rightarrow 8\% \text{ decrease } -8$$

September : 90

$$\frac{10}{90} = .11 \rightarrow 11\% \text{ increase } +11$$

October : 100

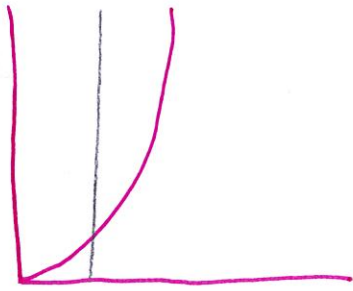
$$\frac{1}{100} = .01 \rightarrow 1\% \text{ decrease } -1$$

Average % change

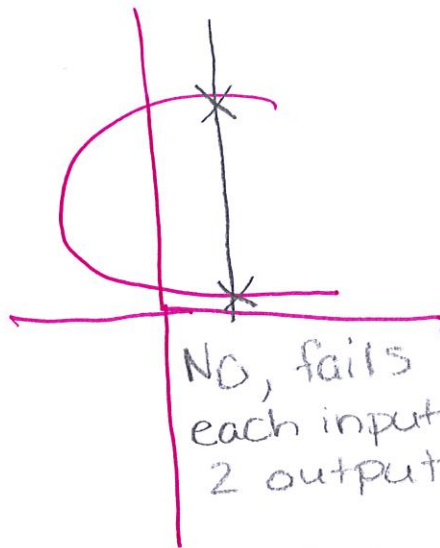
$$\frac{-8 + 11 - 1}{3} = \frac{-20}{3} = -6.\bar{6}\%$$

6.6% decrease

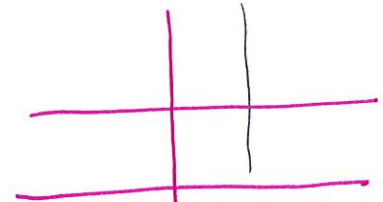
Functions



yes
Passes vertical line test!



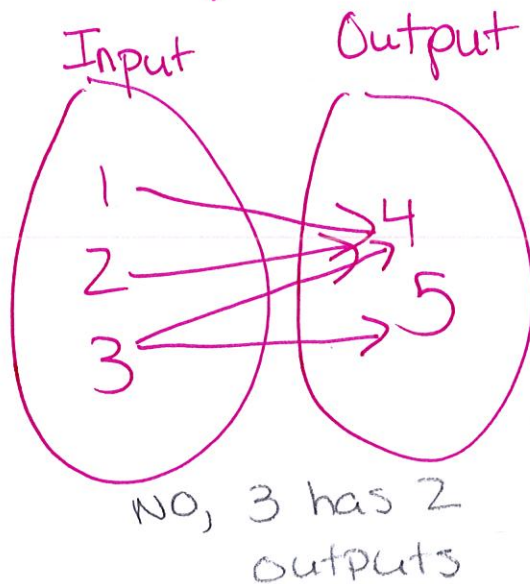
NO, fails V.L.T.
each input has 2 outputs!



yes,
passes V.L.T.

X	y
1	1
2	2
3	3

yes



Real Life Ex

Not a function
Gumball Machine
25¢ → pink, yellow, blue

Function

Grocery Shopping
Each item has one price