

①
$$\frac{(4 \times 10^{-5}) + (2 \times 10^{-5})}{3 \times 10^7} \quad * \text{ same exponent } \checkmark$$

$$(4 \times 10^{-5}) + (2 \times 10^{-5}) \Rightarrow \frac{6 \times 10^{-5}}{3 \times 10^7} \Rightarrow \frac{6}{3} \times \frac{10^{-5}}{10^7}$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

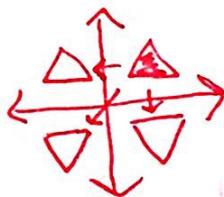
addition: add the #'s
 ~ Keep the 10^{-5}

$$2 \times 10^{-5-7}$$

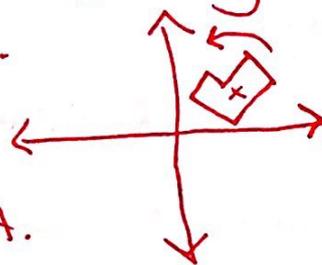
②
$$2 \times 10^{-12}$$

② • Congruence = equal; the same shape + size

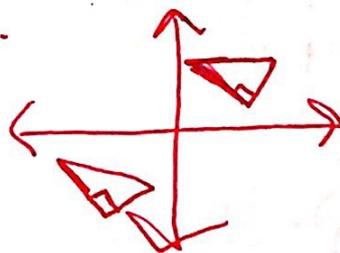
• Reflection = A shape as it would be seen in a mirror.



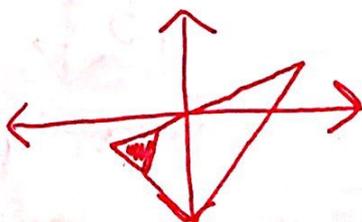
• Rotation = A circular movement. Rotation has a central point that stays fixed + everything else moves around that point in a circle.



• Translation = "Sliding": moving a shape without rotating or flipping it. The shape will look exactly the same, just in a different place.



• Dilation = To resize something.



* maintain congruence

✓ Reflection

(A) ✓

✓ Translation

(B) ✓

✓ Rotation

(C) ✓

✗ Dilation

③ $3^m \cdot 3^n = 3^{-2}$ possible values ...

$$3^{m+n} = 3^{-2}$$

$$3^{1+(-3)} = 3^{-2}$$

$$3^{1-3} = 3^{-2}$$

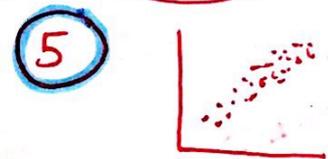
$m = 1$
$n = -3$

④ $\sqrt{81} = 9 \rightarrow$ Rational (A)

$\sqrt{89} = 9.4339811\dots$ Irrational (D)

$\sqrt{121} = 11 \rightarrow$ Rational (E)

$\sqrt{131} = 11.44552314\dots \rightarrow$ Irrational (H)



increasing = Positive (B)

$$\begin{array}{r|l} -4x - 4y & = -6 \\ 4x + 4y & = 6 \\ \hline 0 + 0 & = 0 \\ 0 & = 0 \quad \checkmark \end{array}$$

⑥ $2x + 2y = 3$
 $4x + 4y = 6$

* Elimination

$$\begin{array}{r} -2(2x + 2y) = (3) - 2 \\ 4x + 4y = 6 \end{array}$$

(C) Infinitely Many Solutions

next page

$$7x + 5y = 8$$

$$7x + 7y = 8$$

* Elimination

$$-1(7x + 5y) = (8) - 1$$

$$7x + 7y = 8$$

$$\begin{array}{r} -2x + 3y = 7 \\ 2x - 3y = -7 \\ \hline 0 + 0 = 0 \\ 0 = 0 \end{array}$$

(I) Infinitely Many Solutions

$$\begin{array}{r} -7x - 5y = -8 \\ 7x + 7y = 8 \\ \hline 0 + 2y = 0 \\ 2y = 0 \\ \hline y = 0 \end{array}$$

(E) One Solution

(8) $y = 3.50x + 2$

(C) and (D) are not correct. Nonlinear functions have variables that are raised to a power greater than 1.

* (B) → Since x varies directly with y (constant rate)

(7) • Similar = Only difference of 2 shapes is the size.
 • Congruent = equal; same shape + size.

* Different sizes, not equal.

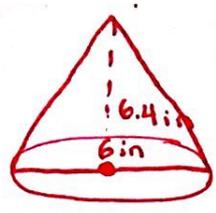
(A) Not diff. size X

* (B) Dilation = diff size ✓

(C) Not diff. size X

(D) Not diff. size X

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$h = 6.4$
 $d = 6$

$$V = \frac{1}{3} \pi r^2 h$$

* We need the radius for the formula, so we have to divide the diameter by 2.

$$6 \div 2 = 3 \leftarrow \text{radius}$$

$$V = \frac{1}{3} \cdot 3.14 \cdot 3^2 \cdot 6.4$$

$$V = 60.288 \text{ in}^3 *$$

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Trial + Error...

$$a^2 + b^2 = c^2$$

$$5^2 + 6^2 \neq 8^2$$

$$25 + 36 \neq 64$$

$$61 \neq 64$$

$$6^2 + 8^2 \neq 10^2$$

$$36 + 64 \neq 100$$

$$100 \neq 100 \checkmark$$

- (B) 6 cm
- (C) 8 cm
- (D) 10 cm

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$$3x = 3x + 4$$

$$\begin{array}{r} -3x \quad -3x \\ \hline 0 \neq 4 \end{array}$$

(A) NO Solution

$$3x + 4 = 3x + 4$$

Same on both sides

(F) Infinitely Many Solutions

$$3x + 4 = 4x + 3$$

$$\begin{array}{r} -3 \quad -3 \\ \hline \end{array}$$

$$3x + 1 = 4x$$

$$\begin{array}{r} -3x \quad -3x \\ \hline 1 = 1x \\ 1 = x \end{array}$$

(H) One Solution

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	Apple J	OJ	Total
Boys	30	100	130
Girls	210	160	370
Total			500

$$370 - 130 = 240$$

$$* 240$$

13) \square Mary \rightarrow Rode 0.2 mi in 4 min.

\square Kim \rightarrow Rode 0.3 mi in 4 min.

* (B) Kim rode faster

(D) Kim stopped for 3 minutes when she reached 0.3 mi.

\square Mary \rightarrow Interval C: Rode 0.1 mi in 8 min.

\rightarrow Interval B: Rode 0.4 mi in 3 min.

* Find unit rate to compare accurately

$$\frac{\text{min}}{\text{mi}} \rightarrow \frac{8 \text{ min} \div 0.1}{0.1 \text{ mi} \div 0.1} = \frac{80 \text{ min}}{1 \text{ mi}}$$

$$\frac{3 \text{ min} \div 0.4}{0.4 \text{ mi} \div 0.4} = \frac{7.5 \text{ min}}{1 \text{ mi}}$$

* (E) Mary rode slower in Interval C than B.

\square Kim \rightarrow Interval C: Rode 0.4 mi in 8 min.

\rightarrow Interval B: Rode 0 mi in 3 min.

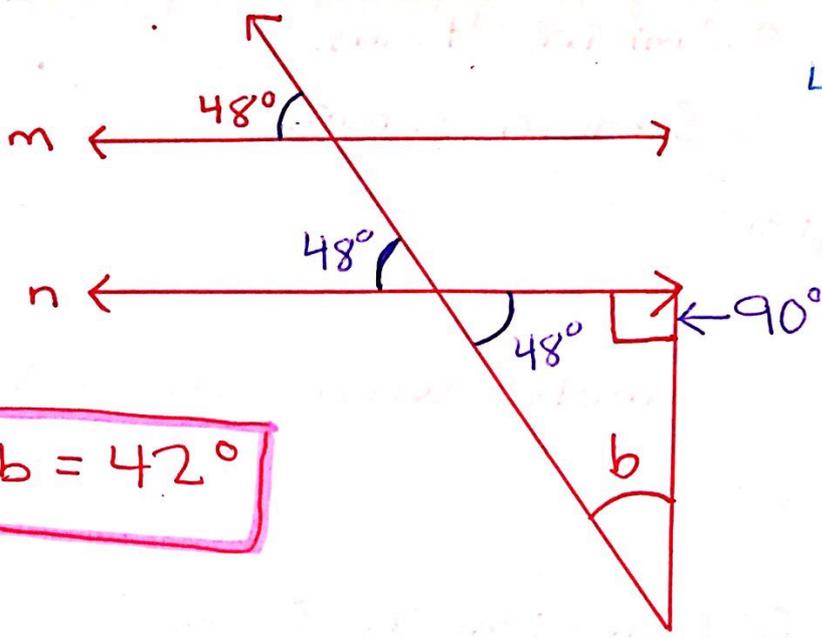
$$\frac{\text{min}}{\text{mi}} \rightarrow \frac{8 \text{ min} \div 0.4}{0.4 \text{ mi} \div 0.4} = \frac{20 \text{ min}}{1 \text{ mi}}$$

$$\frac{3 \text{ min}}{0 \text{ mi}} \rightarrow \frac{\text{X}}{\text{X}} = \frac{\text{X}}{1 \text{ mi}}$$

(G) and (H)

They both live 0.7 mi from school.

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$$48 + 90 + b = 180^\circ$$

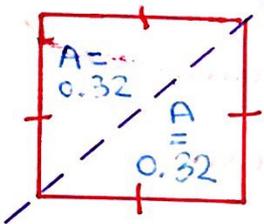
$$\begin{array}{r} \checkmark \\ -138 + b = 180 \\ \hline -138 \\ \hline b = 42 \end{array}$$

* $\angle b = 42^\circ$

15 Line of best fit = A line that is very close to most of the data points.

* (C)

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* Area of Square = 0.32

$$\begin{array}{r} +0.32 \\ \hline 0.64 \end{array}$$

* Squares have equal side lengths (s = side)

$$A = s^2$$

$$0.64 = s^2$$

$$0.64 = s \cdot s$$

$$\sqrt{0.64} = s$$

* $0.8 = s$