Warm Up

What exponent goes in the box to make the following equation true?

$$\frac{x^{\square}x^{6}}{x^{2}} = x^{12}$$

a 9

b 8

c 4

d 3

Which of the following is a simplified form of the expression $4(5x - 8) - 3(2x - 7)$?

a $14x - 11$

b $14x - 53$

c $26x - 11$

d $26x - 53$

Mario is making fruit punch by mixing orange juice and pineapple juice in a ratio of 1:3.

How much pineapple juice should he use to make 3 L of fruit punch?

a 0.75 L

b 2 L

c 2.25 L

d 4 L

Linear Review

Luisa chooses a cellphone plan that charges a flat fee of $20 per month and $0.25 for each text message sent.

Which equation best represents the cost of Luisa's cellphone plan, C, in dollars, where n is the number of text messages sent?

a $C = 20.25n$

b $C = 20(0.25n)$

c $C = 20n + 0.25$

d $C = 0.25n + 20$

There is a linear relationship between the total cost of renting a costume and the number of hours the costume is rented.

- For 3 hours, the total cost is $60.
- For 5 hours, the total cost is $80.

What type of variation is this relationship, and what is its initial value?

a a partial variation with an initial value of $30

b a partial variation with an initial value of $20

c a direct variation with an initial value of $30

d a direct variation with an initial value of $20

Alex's distance from home is represented by the equation $D = -0.5t + 300$, where D represents his distance from home, in kilometres, and t represents time, in minutes.

How long will it take Alex to reach a distance of 182 km from home?

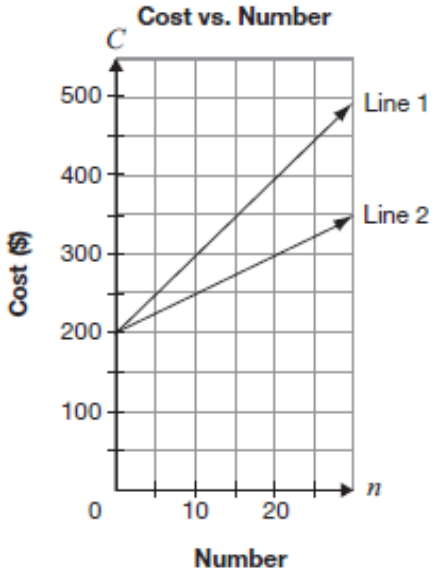
a 236 minutes

b 209 minutes

c 64 minutes

d 59 minutes

Two lines are shown below.



Which of the following describes a difference between Line 1 and Line 2?

a Line 2 has a larger initial cost.

b Line 1 has a larger initial cost.

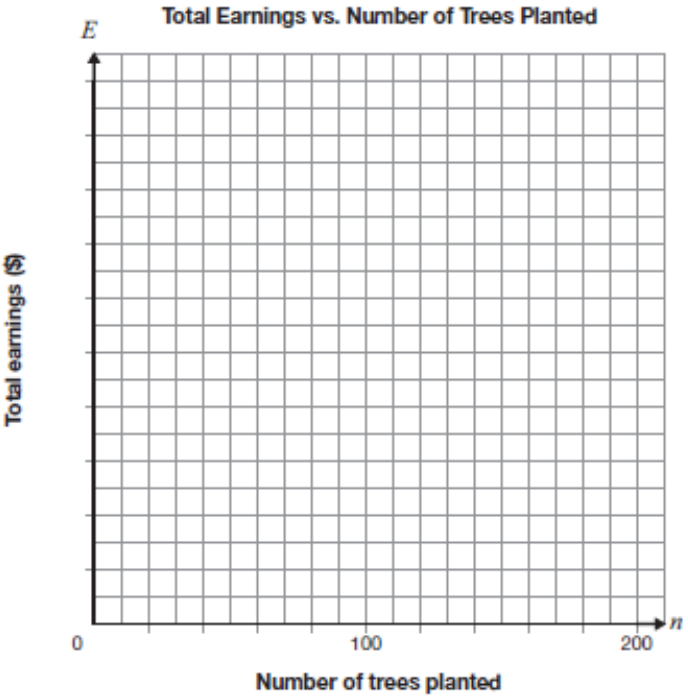
c Line 2 has a greater rate of change.

d Line 1 has a greater rate of change.

Rachel plants trees in Northern Ontario. She is paid \$55 a day plus 15¢ for each tree she plants.

On the grid provided, draw the graph of the relationship between Rachel's total earnings for a single day, E, in dollars, and the number of trees she plants that day, n.

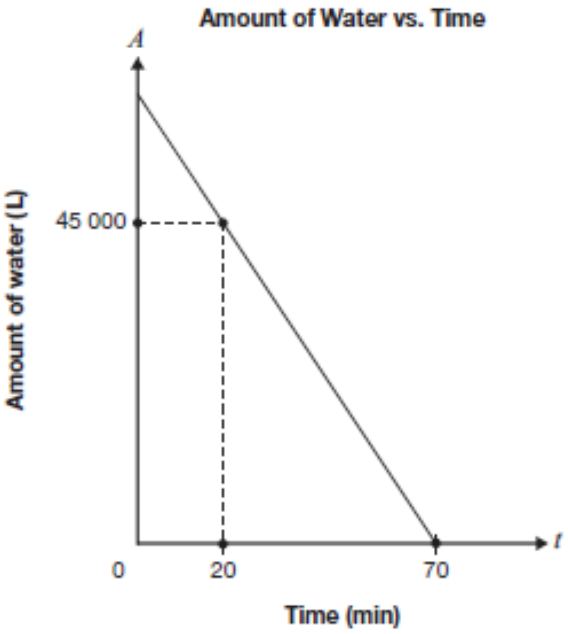
Include a scale on the vertical axis.



Write an equation to represent the relationship between Rachel's earnings for a single day, E, and the number of trees she plants, n.

Water in a Pool

The graph below represents the relationship between the amount of water, A, in a pool as it drains and time, t.



Determine the initial amount of water in the pool and the rate of change of this relation.

Show your work.

Which of the following equations is equivalent to $3x - 5y = 45$?

a $y = \frac{3}{5}x - 9$

b $y = -\frac{3}{5}x + 9$

c $y = 3x - 45$

d $y = -3x + 45$

Which equation below represents a line that is perpendicular to the line represented by $y = 3x - 5$?

a $y = 3x + \frac{1}{5}$

b $y = -3x - \frac{1}{5}$

c $y = -\frac{1}{3}x + 7$

d $y = \frac{1}{3}x - 7$

The equations below represent the relationship between the total cost, C, in dollars, to repair a computer and the amount of time, t, in hours, at two computer repair stores.

Compu-Fix: $C = 10 + 15t$

Data Repair: $C = 30 + 12t$

It will take between 1 and 5 hours to repair Maria's computer.

What are the smallest and largest possible amounts Maria could pay?

a $10, $85

b $10, $90

c $25, $85

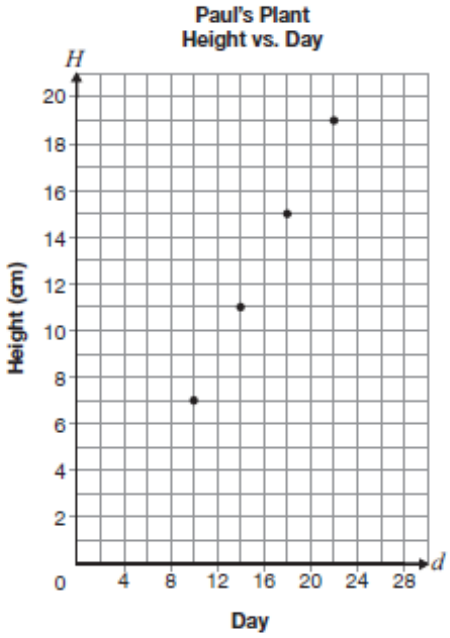
d $25, $90

Lucia and Paul each have a plant. Both plants grow at a constant rate.

Lucia records information about the height of her plant in a table, and Paul graphs his results as shown below.

Lucia's Plant

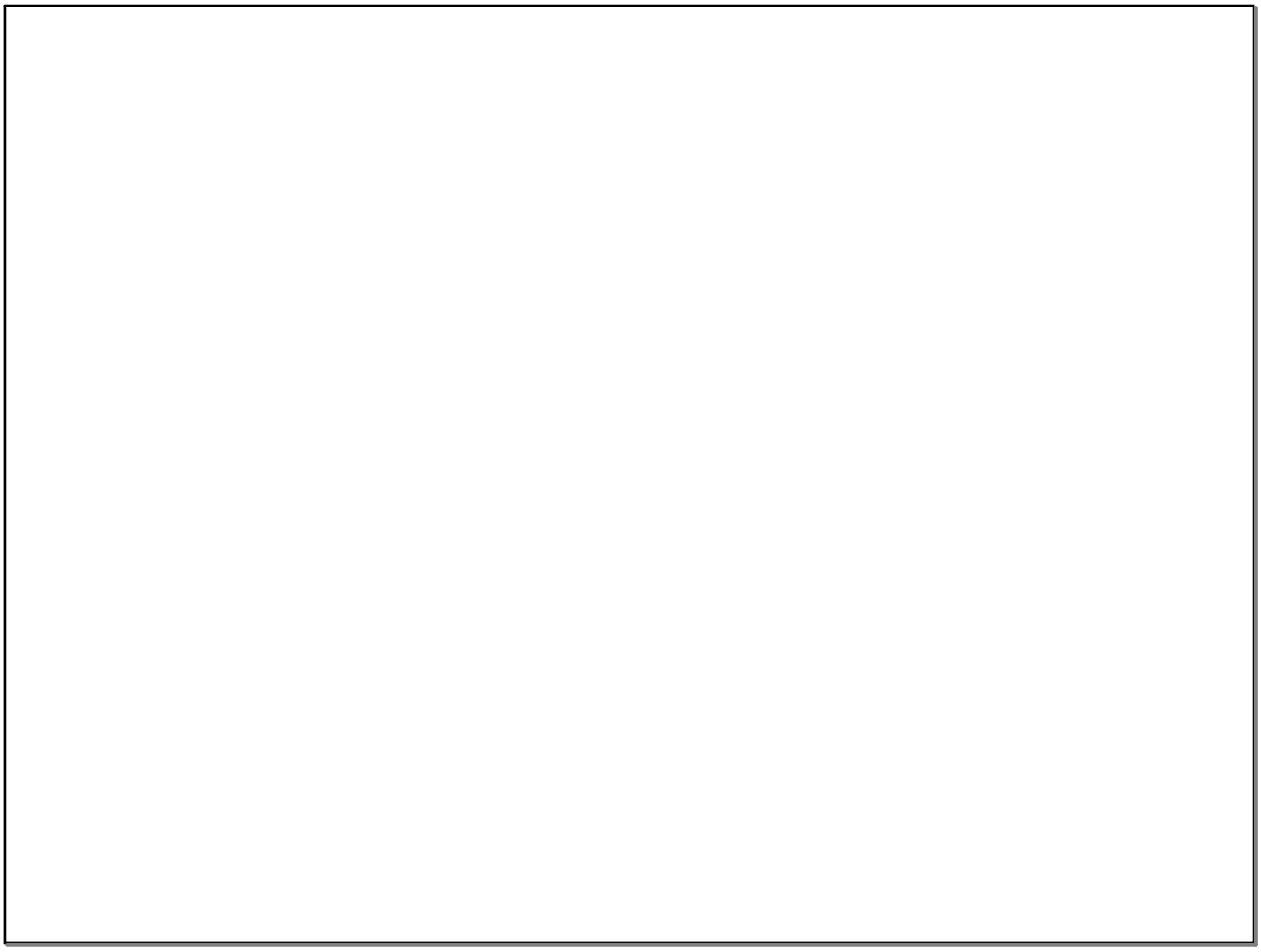
Day	Height (cm)
4	8
7	10
10	12
13	14



Whose plant is growing faster?

Circle one: Lucia's Paul's

Justify your answer.



Three partners, Luc, Deborah and Melanie, share the profits of a business in the ratio 2:3:7 respectively.

The profit for this year is $176 496.

Determine the share of the profit for each partner.
Show your work.

What is the value of P in the equation below when $r = -7$?

$$P = 4 - 2r$$

a -14

b -10

c 14

d 18

The table below shows information about the linear relationship between Ben's total savings and the number of months he saves money.

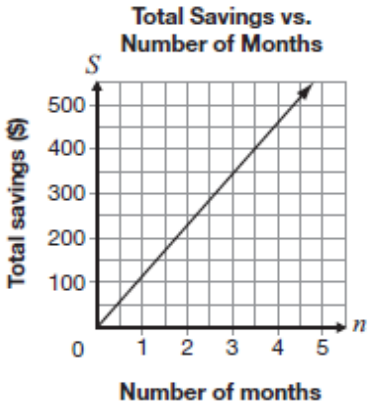
Number of months, n	Total savings, S ($)
3	345
6	540
9	735
12	930

Which of the following represents this relationship?

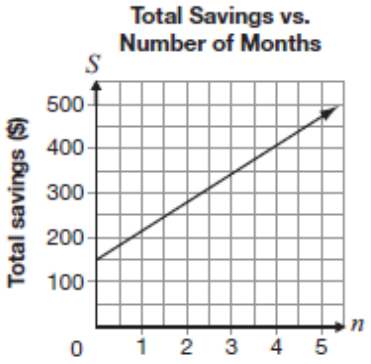
a $S = 65n + 345$

b $S = 195n + 150$

c

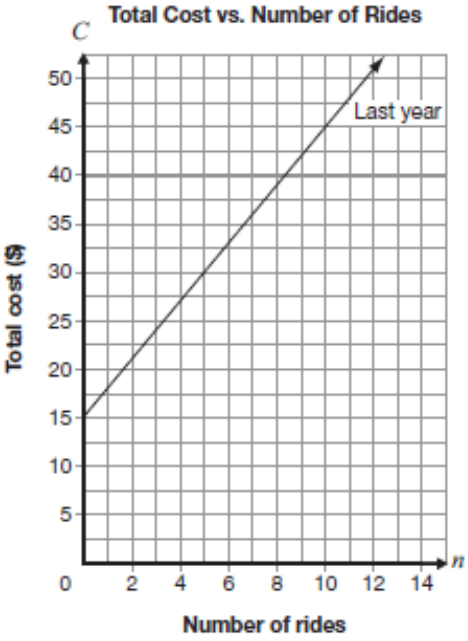


d



14 Roll with It!

The total cost at an amusement park is made up of an admission fee and a cost per ride. Information about the total cost for n rides last year is shown below.



This year, the cost per ride is reduced from last year, but the total cost for 10 rides is the same.

Determine a possible equation for the total cost, C, for this year. Include an admission fee and a cost per ride.

Justify your answer.

The equation of a line is $5x - 2y + 10 = 0$.

Which of the following expresses this equation in the form $y = mx + b$?

a $y = \frac{5}{2}x + 5$

b $y = \frac{5}{2}x + 10$

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

d $y = -\frac{5}{2}x + 10$

A formula for determining the slope of a line is given below.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

What is the slope of the line that passes through the points (2, 3) and (5, −6)?

a -11

b -3

c $-\frac{1}{3}$

d $-\frac{1}{11}$