15.1

The movie theater is filled to capacity with 200 people. When the movie is over, people will leave at a rate of 30 per minute. Describe in words the relationship between the number of people remaining in the theater and time.

Fill in the table with data to describe this relationship.

minutes	people

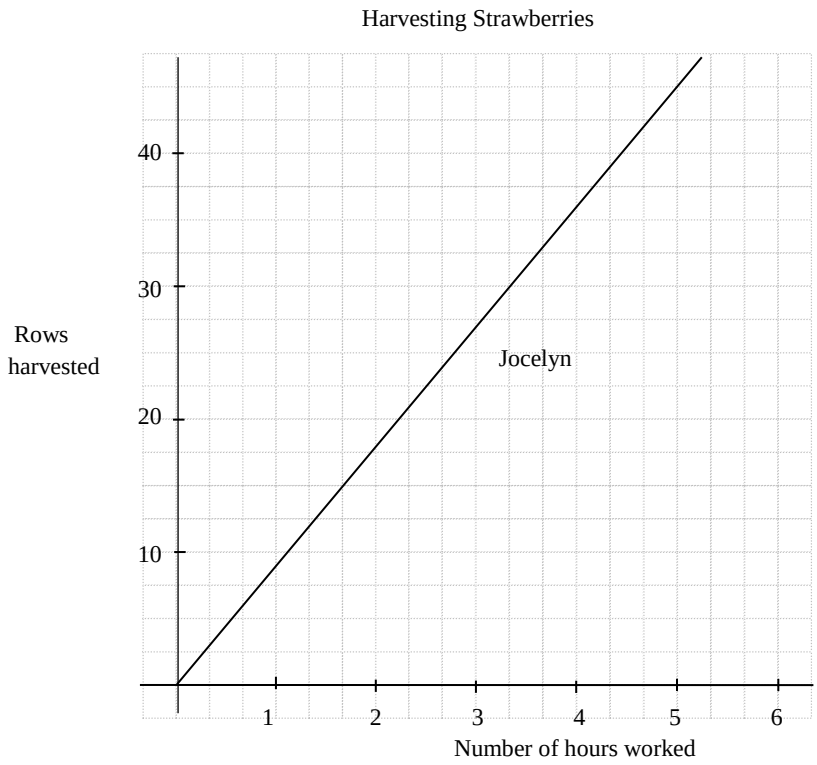
Use algebraic symbols to describe this relationship. Be sure to label your variables.

What is the *y*-intercept and what does it mean about time and the theater? (0, ____)

What is the *x*-intercept and what does it mean about time and the theater? (____, 0)

15.2

Jeremy and Jocelyn are helping to harvest strawberries. Jeremy can harvest 7 rows/hour and Jocelyn can do 9 rows/hour. Jeremy started before Jocelyn and already has 10 rows completed when she begins. The graph for Jocelyn's number of rows harvested is already drawn. On the same set of axes, draw a graph to represent Jeremy's work.



Write an equation to represent Jeremy's number of rows harvested as it relates to hours worked alongside Jocelyn. Identify your variables.

Show your work to determine the point of intersection of the two lines.

Hours: _____ Rows: _____

Explain the meaning of the point of intersection as it relates to Jeremy and Jocelyn.

15.3

Suppose Turtle runs at 60 ft/s. Rabbit runs at 90 ft/s, but gives Turtle a 2-second head start. How many seconds will Turtle have run when Rabbit catches up with him? Show your work.

Answer: _____

Circle the method you used to solve:

table graph algebra equations quantitative reasoning

15.4

Kaitlyn attended Ivy Tech and completed 20 credit hours with a GPA of 3.1. She has been attending Purdue long enough to complete 15 credit hours with a GPA of 2.4. What is her overall GPA? Show and label all steps of your work. Do not round.

Overall GPA: _____

15.5

Suppose $g(x) = 5x + 2$ and $h(x)$ is defined by the process of adding 3 to the input and then doubling that sum. Give the output if 2 is the input to:

a) first $h(x)$, then $g(x)$

Answer: _____

b) first $g(x)$, then $h(x)$

Answer: _____

15.6

Use the order of operations to evaluate:

$4-15\div 3+2^5-(8-9)^2+17$

$\left(3^2\right)^3-7\cdot(5-1)^2+3\frac{2}{3}\cdot 4\frac{1}{2}$

27.1

For the experiment of tossing a pair of dice, determine which of the following could be considered outcomes. For those, circle the word "outcome." Otherwise, circle the word "event."

a) Getting a sum of ten OUTCOME EVENT

b) Getting doubles OUTCOME EVENT

c) Getting two 3s OUTCOME EVENT

d) Getting a sum of twelve OUTCOME EVENT

27.2

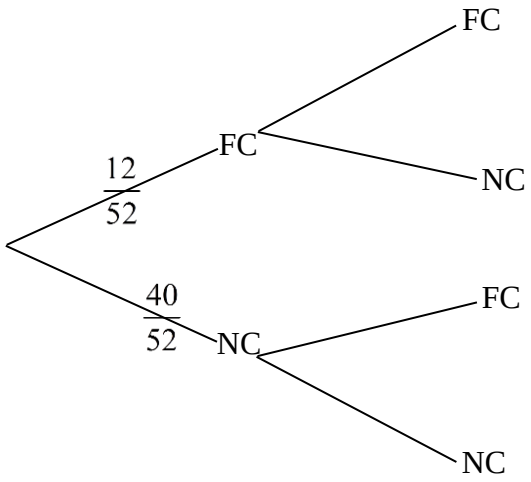
On Elm Street, there are 27 houses of which 8 do <u>not</u> have a garage. Morgan lives on Elm Street. Determine the odds in favor of Morgan living in a house that <u>has</u> a garage.

A. 8 : 19
B. 19 : 27
C. 8 : 27
D. 27 : 35
E. 19 : 8

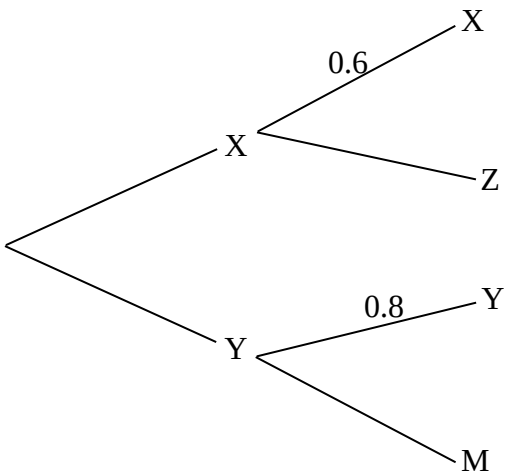
28.1

The tree diagram represents the experiment of selecting a card from a standard deck with face cards jack, queen, king, in each suit; not replacing it; then selecting another. Fill in the probabilities for the second set of branches. Simplify all fractions.

FC = face cards; NC = number cards



For some unusual 2-step experiment, only the data below are given. Fill in all missing probabilities on the branches and then complete parts a and b.



P(YY) = 0.24

a) P(XZ) =

b) P(YM) =

28.2

Experiment: Spin Spinner 1, note the number. Then spin Spinner 2 and note the number.

Make a tree diagram for this experiment with probabilities on the branches of the tree.
Include the sample space for the experiment and the associated probabilities. Use simplified fractions.

Tree diagram Sample Space Probabilities

P(first spin is an even number) =

P(the sum of the two spins is 9) =

Show the use of the Addition Rule for Probability to find:
P(first spin is an even number *or* the sum of the two spins is 9) =

28.3

If you pick a book at random from Washington School library, P(red cover) = 0.2 and P(fiction) = 0.4. Assume independence of the two events. Show your work or otherwise justify your answer.

a) P(red cover *and* fiction) =

b) P(red cover *or* fiction) =