Determine Dependency

Richardson Read-It tomorrow
DON'T FORGET YOUR BOOK

Agenda

Warm-Up
HW Check
Notes
Homework (2 pages)
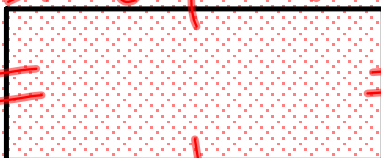
Reminders

- Test corrections due Friday
(Thurs AM/PM; Fri AM)
HW 23
Due Friday
-TEKS Check TEST next
Tuesday

Warm-Up

1. Mayra is building a <u>rectangular</u> pen for her dog. The length of the pen is 6 meters less than twice the width. If Mayra uses a total of <u>30 meters of fencing</u> around the pen, what is the <u>length of the pen?</u>

Perimeter

$$l = 2w - 6$$

(7)

$w = 7$

$$2w + 2(2w-6) = 30$$
$$2w + 4w - 12 = 30$$
$$6w - 12 = 30$$
$$+12 \quad +12$$
$$6w = 42$$
$$\frac{6w}{6} = \frac{42}{6}$$
$$w = 7$$

$$2(7) - 6$$
$$14 - 6 = \boxed{8\,m}$$

1

Answers:

1. Ind: time on the phone
   Dep: how much studying
   gets done

2. Ind: how much time at pool
   Dep: how many books I read

3. Ind: sales tax
   Dep: purchase price(with sales tax)

4. Ind: how big the fire is
   Dep: number of firefighters

5. Ind: number of days it's late
   Dep: total cost

6. Ind: temperature
   Dep: amount of electricity uses

7. Ind: number of hours
   Dep: height of the candle

8. Ind: x
   Dep: y

9. Ind: r
   Dep: v

10. A

11. Independent – the number of hours I
    study
    Dependent – my grade point average

    dep depends ind

    • My grade point average depends on number of
      hours I study
      dep
    • My grade point average is a function of the
      number of hours I study *ind*
    • The number of hours I study determines my
      grade point average

    ind determines dep

Algebra I - Unit 3: Topic 1 – Identifying Independent and Dependent

Practice – Identifying Independent and Dependent   **p 246**

Name _____ Date _____ Period _____

Determine the independent and dependent variables in the given situations.

1. How much time I spend on the phone effects how much studying I get done.

    a. Independent Variable:

    b. Dependent Variable:

2. The number of books I read over the summer depends on how much time I spend at the pool.

    a. Independent Variable:

    b. Dependent Variable:

3. Sales tax in the state of Maryland is 5% of the purchase price.

    a. Independent Variable:

    b. Dependent Variable:

4. The fire was very big so many firefighters were there.

    a. Independent Variable:

    b. Dependent Variable:

5. To rent a DVD, a customer must pay $3.99 plus $0.99 for every day that it is late.

    a. Independent Variable:

    b. Dependent Variable:

6. In the winter, more electricity is used when the temperature goes down, and less is used when the temperature rises.

    a. Independent Variable:

    b. Dependent Variable:

7. The height of a candle decreases d centimeters for every hour it burns.

    a. Independent Variable:

    b. Dependent Variable:

Algebra I - Unit 3: Topic 1 – Identifying Independent and Dependent

Determine the independent and dependent variables in the given situations.

8. $\frac{3}{4}x - 5 = y$

   a. Independent Variable:

   b. Dependent Variable:

9. $v = \frac{4}{3}\pi r^3$

   a. Independent Variable:

   b. Dependent Variable:

10. During a sale at a shoe store, all shoes were 25% off the original price. Which statement best describes the functional relationship between the sale price of a pair of shoes and the original price?

   A The sale price is dependent on the original price
   B The original price is dependent on the sale price
   C The sale price and the original price are independent of each other
   D The sale price is dependent on the number of pairs of shoes purchased.

Consider these two variables. Identify them as either independent or dependent. Then complete the sentences.

11. The number of hours I study   My grade point average

   _____   _____

   _____ depends on _____

   _____ is a function of _____

   _____ determines _____

Determine Dependency p. 37

Cause	Effect
~~Independent~~	Dependent
x	y
Domain	Range
Input	Output
Leader	Follower
Replacement Set	Solution set
X	f(x)

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Student Notes - Determine Dependency   p 246

Rewrite each situation showing dependency, then identify the dependent and the independent variables.

1. An employee who works longer hours will receive a larger amount on her paycheck.
   Rewrite Sentence:

   The __amount of paycheck__ *depends on* __hours worked__.
                                dep   ind

   Dependent: __paycheck__   Independent: __hours worked__

2. A box with several books weighs more than a box with just a few books.
   Rewrite Sentence:

   The __weight of box__ *is a function of* __# of books__.
              dep   ind

   Independent: __# of books__   Dependent: __weight of box__

3. The fire was very large, so many firefighters were there.
   Rewrite Sentence:

   If the fire is large, then there are many firefighters.
                 ind.   dep.

   Dependent: __# firefighters__ Independent: __size of fire__

4. Connie received a statement from her bank listing the balance in her savings account for the past four years.
   What is the independent quantity in this table?

Time	Balance
0	$2000
1	$2140
2	$2290
3	$2450
4	$2622

   ind.   dep.

   time.

5. Karen is in charge of making 120 corsages for homecoming. She decides to ask some of her classmates to help. The number of corsages each person will need to make can be represented by the function $f(h) = \dfrac{120}{h+1}$ where h is the number of classmates that help make corsages. What are the independent and dependent variables of this function?

   independent: h, # of classmates
   dependent: f(h), # of corsages

6. The table below represents the amount of money that people paid for gas. What is the dependent variable in this situation?

Gallons	10	12	13	17
Dollars	19.99	23.99	25.99	33.98

   ind
   dep

   Dollars spent

Algebra I - Unit 3: Topic 1 – Determine Dependency

Practice - Determine Dependency   **p 246**

Name _____ Date _____ Period _____

Rewrite each situation showing dependency, then identify the dependent and independent variables.

1. The temperature of the water on the heated stove rose each minute.
   Rewrite Sentence:

   Dependent: _____   Independent: _____

2. The restaurant bill was low because only a few meals were ordered.
   Rewrite Sentence:

   Independent: _____   Dependent: _____

Answer the following:

3. A plumber charges $35 to make a house call, plus $25 an hour for labor. The following equation represents c, the total cost of a visit for h hours: $c = 25h + 35$ What is the independent variable?

   A   Number of hours worked
   B   Amount of money paid
   C   Price of labor
   D   House call charge

4. The table below represents the relationship between the number of gallons of gas in a gas tank and the number of miles that can be driven. What is the independent variable in this situation?

	# gallons in tank	# miles can drive
A Miles that can be driven	8	176
B Gallons of gas in tank	11	242
C Miles per gallon	13	143
D Price per gallon	16	176

5. Maurice answered all 25 questions on a multiple-choice history exam. His score was computed by multiplying the number of wrong answers by 4 and then subtracting that number from 100. What quantity represents the independent variable and what quantity represents the dependent variable in this situation?

   Independent: Dependent:

6. Sean partially filled a container with water. The container was shaped like a rectangular prism and had dimensions 9 inches long, 8 inches wide, and 10 inches high. If h represents the height of the water (in inches), and the volume V (in cubic inches) of the water is given by the formula $V = 72h$, which quantity is the independent variable?

   A   The height of the container
   B   The volume of the container
   C   The height of the water in the container
   D   The volume of the water in the container

7. This equation is the conversion formula to change the units for measuring temperature from degrees Fahrenheit to degrees Celsius: $C = \frac{5}{9}(F - 32)$ Which expression best describes the variables C and F?

   A   There is no relationship between C and F
   B C is dependent on F
   C F is dependent on C
   D C and F are the same

Algebra I - Unit 3: Topic 1 – Determine Dependency

8. A taxi driver charges an initial fee of $2.00 plus $0.30 per mile. What is the independent variable quantity in this situation?

    A   The initial fee
    B   The total cost charged by the driver
    C   The cost per each mile driven
    D   The number of miles driven

9. A long distance telephone company charges $4.95 per month and $0.07 per minute for phone calls. What is the dependent variable quantity in this situation?

    A   The cost per minute for a long distance call
    B   The total cost for a 10-minute long distance call
    C   The total monthly charge for long distance service
    D   The number of minutes of a long distance call

10. For a car traveling at a speed of 50 miles per hour, the relationship between the distance traveled, d, and the time traveled, t, is described by the function $d = 50t$. Which statement is true?

    A   The time traveled depends on the distance traveled.
    B   The distance traveled depends on the time traveled.
    C   The speed of the car depends on the distance traveled.
    D   The speed of the car depends on the time traveled.

11. To find c, the total cost of an order of DVDs from a certain website, the equation $c = 19.99n + 4.99$ can be used, where n represents the number of DVDs ordered. If c is a function of n, which of the following best describes this relationship?

    A   The value of n is constant in relation to c.
    B   The value of n is dependent on c.
    C   The value of c is constant in relation to n.
    D   The value of c is dependent on n.

12. If y is a function of x in $y = -\frac{3}{4}x - 5$, which of the flowing statements is true?

    A   The independent variable, y, is 5 less than $-\frac{3}{4}$ the dependent variable, x.

    B   The dependent variable, y, is 5 less than $-\frac{3}{4}$ the independent variable, x.

    C   The independent variable, x, is 5 less than $-\frac{3}{4}$ the dependent variable, y.

    D   The dependent variable, x, is 5 less than $-\frac{3}{4}$ the independent variable, y.

13. At Computers R Us, all laptops are on sale for a discount of 15%. Which statement best represents the functional relationship between the sale price of a laptop and the original price?

    A   The original price is dependent on the sale price.
    B   The sale price is dependent on the original price.
    C   The sale price and the original price are independent of each other.
    D   The relationship cannot be determined.