

Midterm Review (Modules 1-9) December 2016

1. What is the solution of $53 - x = -72$?
 $x = 125$

2. Does each equation have at least one solution?
- A $27 - x = 21 - x$ Yes No
 B $-9x + 7 = -9x - 11$ Yes No
 C $17x - 11 = 17x - 11$ Yes No
 D $-3x + 5 = 8x - 7$ Yes No

3. Solve $-11x = x - 90$
 $x = \frac{15}{2} = 7.5$

4. A rental storage locker is 11.5 ft wide and 25.5 ft long. What is the approximate area of the locker in square meters? (Hint: $1 \text{ m} \approx 3.28 \text{ ft}$)
 27.3 m^2

For 5-6, answer the questions for a circle with radius 7.25 inches.

5. What is the approximate circumference of the circle in centimeters? (Hint: $1 \text{ in.} = 2.54 \text{ cm}$)
 115.7 cm

6. What is the approximate area of the circle in square centimeters?
 1065.4 cm^2

7. Simplify $9(x - (-7)) + 20(2 - x)$.
 $-11x + 103$

8. Which of the following is the most precise measurement?
 A 147.9 in. C 7.257 in.
 B 72.5 in. D 27.25 in.

9. What is the product of 30.0 ft and 5.25 ft written with the correct number of significant digits?
 158 ft^2

10. Simplify completely $15(m + 2) - 3(y + 1)$
 $15m - 3y + 27$

11. Which of the following expressions has two terms, one of which has a coefficient of 8?
- A $6 - y^2 + 8$
 B $8 - 16y$
C $8x^2 - 21$
 D $8z^2 - 3z + 12$

12. The equation a company uses to calculate pay checks is $p = 12h + 0.25s$, where h is the number of hours worked and s is total sales. What is the result when the equation is solved for h ?
 $h = \frac{p - 0.25s}{12}$

13. Which statement describes the solutions of $6 + 3x > 24$?
- A real numbers less than 6
B real numbers greater than 6
 C real numbers less than or equal to 6
 D real numbers greater than or equal to 6

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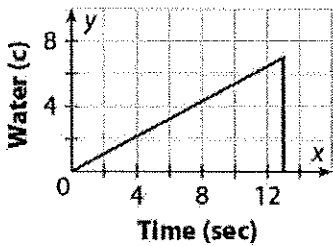
14. Solve $2.75x - 3 \leq 15$.

$x \leq 6.55$

15. What are the solutions to $7(x + 9) \geq 7x - 33$?

All real numbers

16. Write a situation that can be represented by the graph shown below.



Water filling a pitcher then dumped out.

17. Which of the following sets of ordered pairs does **not** describe a function?

A $\{(8, -3), (5, 6), (6, 6), (9, -3)\}$

B $\{(8, 1), (6, 3), (4, 5), (2, 7)\}$

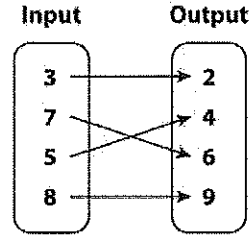
C $\{(8, 8), (6, 6), (4, 4), (2, 2)\}$

D $\{(8, -2), (8, -1), (3, 0), (5, 2)\}$

18. Rewrite the equation $2y + 6x = 12x - 16$ using function notation.

$f(x) = 3x - 8$

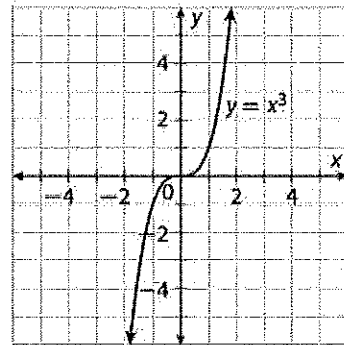
19. What is the domain and range of the relation represented on the mapping diagram?



Domain: $\{3, 5, 7, 8\}$

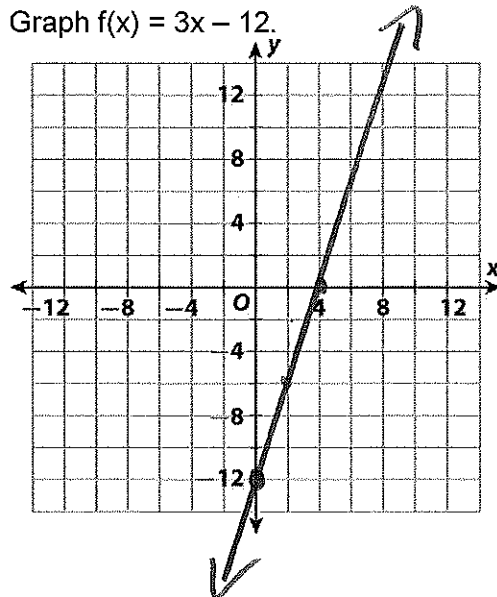
Range: $\{2, 4, 6, 9\}$

20. Based on the graph, shown below, is $y = x^3$ a function? Explain your answer.



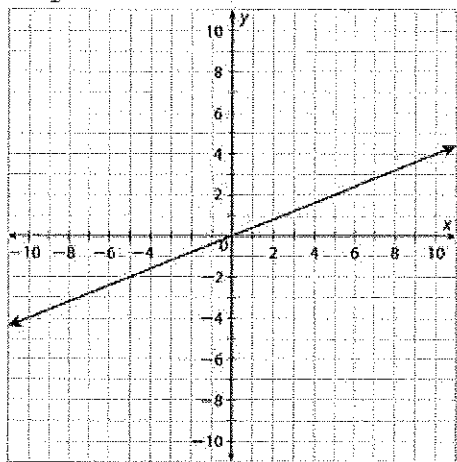
Yes \Rightarrow passes the vertical line test.

21. Graph $f(x) = 3x - 12$.



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22. What is the equation of the graph shown?



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

23. Does each sequence have a common difference of -3 ?

A $\frac{1}{9}, \frac{1}{3}, 1, 3, 9 \dots$

Yes No

B $5, 2, -1, -4, -7 \dots$

Yes No

C $27, 30, 33, 36, 39 \dots$

Yes No

D $1.5, -1.5, -4.5, -7.5 \dots$

Yes No

24. The explicit rule of a sequence is $f(n) = 3n^2 - 1$. Determine if each statement is True or False.

A The third term of the sequence is 26.

True False

B The fifth term of the sequence is 29.

True False

C The sequence is arithmetic.

True False

Use the information below for 25–27.

The table shows the relationship between the number of minutes of light a fungus is exposed to and the diameter of the fungus. This relationship can be represented by an arithmetic sequence.

Minutes (n)	1	2	3	4
Growth ($f(n)$)	12	25	38	51

25. Write a recursive rule for the sequence.

$f(1) = 12, f(n) = f(n-1) + 13$

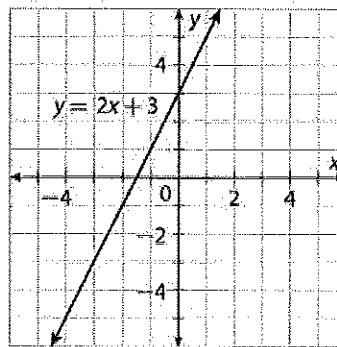
26. Write an explicit rule for the sequence.

$f(n) = 12 + 13(n-1)$ or $f(n) = 13n - 1$

27. How large will the fungus be if exposed to 7 minutes of light?

90

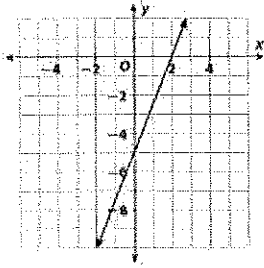
28. What is the x-intercept of the line graphed below?



x-intercept: $-\frac{3}{2}$ or -1.5

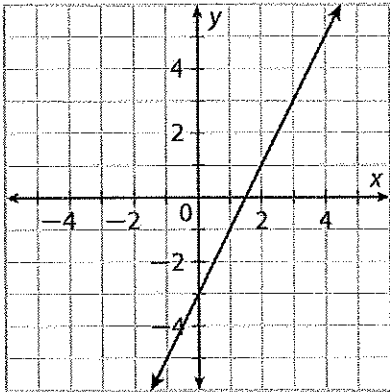
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29. What best describes the slope of the line shown on the graph below?



- A positive C 0
 B negative D undefined

30. What is the slope of the line below?



$m = 2$

31. Does each of the following equations describe a line with a y -intercept of 8?

- A $y = 8 - 13x$ Yes No
 B $y + 25 = -9x - 17$ Yes No
 C $17 + y = 5x + 25$ Yes No

32. Which equation describes a line that passes through $(-4, 3)$ and $(5, -6)$?

- A $y = -4x + 3$ C $y = x + 1$
 B $y = -2x - 1$ D $y = -x - 1$

Use the information below for 33–35.

The table below shows the relationship between the number of hours an air conditioning repair takes and the total cost charged by a repairperson.

Hours (x)	2	4	6	8
Cost (y)	\$135	\$195	\$255	\$315

33. Write a linear equation in slope-intercept form that describes the relationship in terms of x and y .

$y = 30x + 75$

34. How much does the repairperson charge per hour?

\$ 30/hr.

35. How much does the repairperson charge for a 11-hour-long project?

\$ 405

36. Write an equation in point-slope form for a line that passes through $(3, 8)$ and $(7, -2)$.

$y - 8 = -\frac{5}{2}(x - 3)$ or $y + 2 = -\frac{5}{2}(x - 7)$

37. Write an equation in standard form for a line with a slope of -9 that includes the point $(7, 15)$.

$9x + y = 78$

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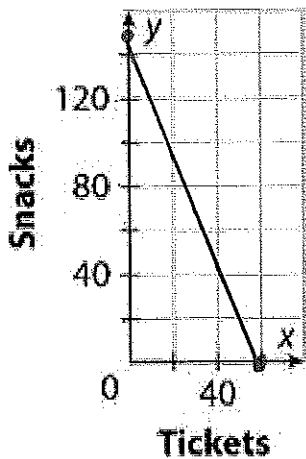
For problems 38-40:

The members of a wheelchair basketball league are playing a benefit game to meet their fundraising goal of \$900. Tickets cost \$15 and snacks cost \$6.

38. Write a linear equation that describes the problem.

$$15x + 6y = 900$$

39. Graph the linear equation.



$$x = 60$$

$$y = 150$$

40. If the team sells 50 tickets, how many snacks does it need to sell to reach the goal?

25 snacks

41. DJ A charges \$75.30 plus \$12.50 per hour. DJ B charges \$52.90 plus \$18.10 per hour. When will their charges be equal?

$$A \quad y = 12.5x + 75.3$$

$$B \quad y = 18.1x + 52.9$$

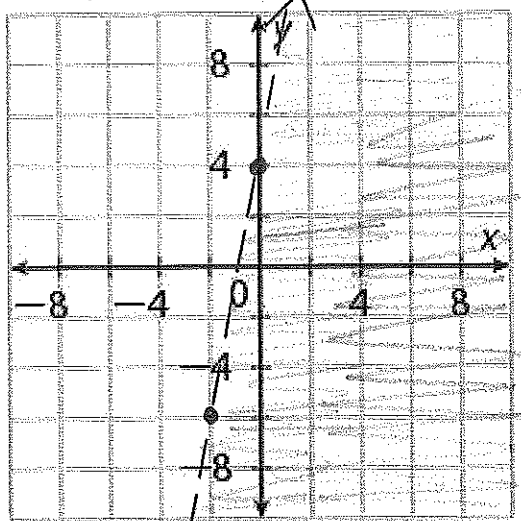
$$12.5x + 75.3 = 18.1x + 52.9$$

$$22.4 = 5.6x$$

$$4 = x$$

4 hours

42. Graph the inequality: $8 - 2y > -10x$



$$8 - 2y > -10x$$

$$-2y > -10x - 8$$

$$y < 5x + 4$$

43. a. A school administrator conducted a survey in her school. Students were asked to choose the science or the natural history museum for an upcoming field trip. Complete the two-way frequency table.

Gender	Field Trip Preferences		
	Science	History	Total
Boys	46	56	102
Girls	54	44	98
Total	100	100	200

b. How many boys want to go to the Science museum?

46

c. How many girls do not prefer the natural history museum?

54

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44. Brooke conducted a survey to find the eye colors of her neighbors. Use the following information to complete the frequency table.

- She surveyed 23 children, 14 teenagers, and 36 adults.
- Six adults had blue eyes, and 10 adults had hazel eyes.
- Three teenagers had green eyes.
- No teenagers had hazel eyes.
- The same number of teenagers had green eyes as blue eyes.
- In all, 33 people had brown eyes.

	Blue	Green	Hazel	Brown
Child	5	2	6	10
Teenager	3	3	0	8
Adult	6	5	10	15
	14	10	16	33

45. Ursula interviewed 75 people to see if they liked reading comic books. Of the people surveyed, 15 were males. In all, 32 females liked comic books, and 9 males liked comic books. What is the conditional frequency that a person does not like comic books given that the person is a male?

15 males

$$\frac{6}{15} = \frac{2}{5} = 0.4 = 40\%$$

46.

What types of music do you like?			
Classical			
Pop	Yes	No	Total
Yes	102	62	164
No	35	81	116
Total	137	143	280

What is the joint relative frequency that a person surveyed dislikes both classical music and pop music?

$$\frac{81}{280} = .289 \text{ or } 28.9\%$$

47. For the set {1, 1, 2, 4, 5, 6, 7, 8, 10}, 10 would each of the following measures be affected if another value of 10 was included?

- A mode Yes No
- B median Yes No
- C mean Yes No
- D range Yes No

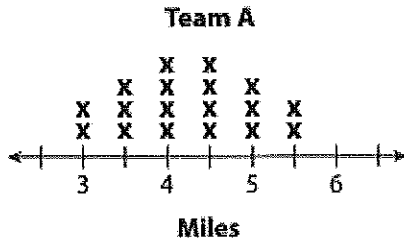
48. The data sets below show the price that a homeowner paid, per therm, for natural gas during each of the first ten months of 2011.

- \$1.59, \$1.72, \$1.71, \$1.86, \$2.32, \$2.54, \$2.45, \$2.80, \$2.38, \$2.25

Find the mean:
\$ 2.16
 Find the Standard Deviation:
.39

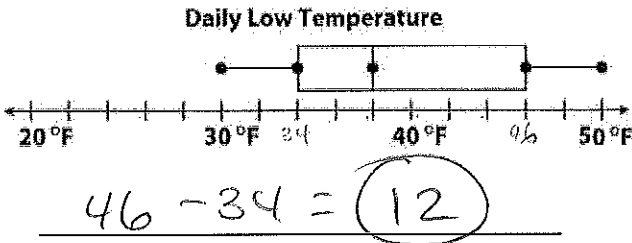
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49. Which statement best describes the data distribution shown on the dot plot below?



- A skewed left C skewed right
 B symmetric D bimodal

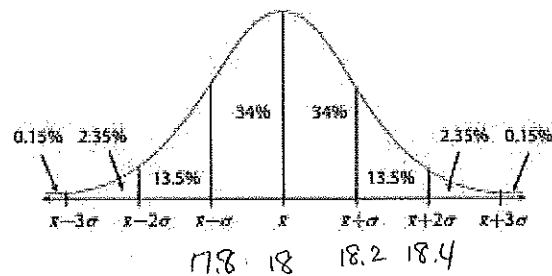
50. What is the interquartile range of the data represented on the plot below?



51. The amount of cereal in a carton is listed as 18 ounces. The cartons are filled by a machine, and the amount filled follows a normal distribution with mean of 18 ounces and standard deviation of 0.2 ounce.

What is the probability that a carton of cereal contains between 17.8 ounces and 18.4 ounces?

- A 81.5% C 47.5%
 B 49% D 13.5%



A

