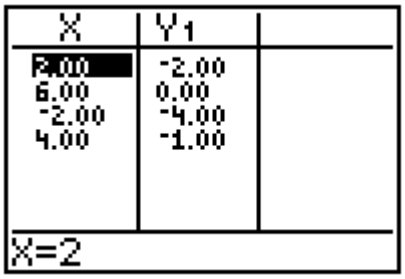
MAC 1105 Module Test 2

Name_____

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**You are given a table showing input and output values for a given function $y_1 = f(x)$. Use the table to answer the question.**

1) What is the x–intercept of the graph of y = f(x)?




A) –2 B) 6 C) –1 D) 0

Answer: B
Objective: (1.5) Tech: Find Intercepts of Function Given Table

**Solve the formula for the specified variable.**

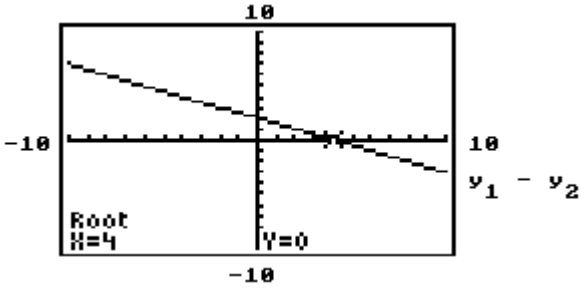
2) $I = \frac{nE}{nr + R}$ for n

A) $n = \frac{IR}{Ir + E}$ B) $n = \frac{-R}{Ir - E}$ C) n = IR(Ir – E) D) $n = \frac{-IR}{Ir - E}$

Answer: D
Objective: (1.5) Solve Formula for Specified Variable

**A linear function $y_1$ has been graphed in an appropriate viewing window. Use the x–intercept method to solve the equation $y_1 = 0$.**

3)




A) 4 B) 5 C) 2 D) 0

Answer: A
Objective: (1.5) Tech: Solve Linear Eqn Using x–Intercept Method

**Solve the formula for the specified variable.**

4) $P = a + b + c$ for a

A) $a = P - b - c$ B) $a = b + P - c$ C) $a = b + c - P$ D) $a = P + b + c$

Answer: A
Objective: (1.5) Solve Formula for Specified Variable

**Solve the problem.**

5) The temperature of water in a certain lake on a day in October can be determined by using the model $y = 15.2 - 0.537x$ where x is the number of feet down from the surface of the lake and y is the Celsius temperature of the water at that depth. Based on this model, how deep in the lake is the water 11 degrees? (Round to the nearest foot.)

A) 64 ft B) 49 ft C) 26 ft D) 8 ft

Answer: D
Objective: (1.5) Solve Apps: Linear Equations

**Solve the equation.**

6) $(y - 9) - (y + 6) = 8y$

A) $-\frac{15}{8}$ B) $-\frac{5}{3}$ C) $-\frac{15}{7}$ D) $-\frac{1}{4}$

Answer: A
Objective: (1.5) Solve Linear Equation Algebraically

**Solve the formula for the specified variable.**

7) $A = P(1 + nr)$ for r

A) $r = \frac{P - A}{Pn}$ B) $r = \frac{Pn}{A - P}$ C) $r = \frac{A}{n}$ D) $r = \frac{A - P}{Pn}$

Answer: D
Objective: (1.5) Solve Formula for Specified Variable

**Solve the equation.**

8) $\frac{-6x + 5}{5} + \frac{4}{5} = -\frac{3x}{7}$

A) $\frac{21}{19}$ B) $\frac{7}{27}$ C) $\frac{7}{3}$ D) $-\frac{7}{27}$

Answer: C
Objective: (1.5) Solve Linear Equation (Fractions, Decimals)

**Solve the problem.**

9) Mark has $105 to spend on salmon at $5.00 per pound and/or chicken at $3.00 per pound. If he buys s pounds of salmon and c pounds of chicken, the equation $5s + 3c = 105$ must be satisfied. How much salmon did Mark buy if he bought 20 pounds of chicken?

A) 9 pounds B) 16 pounds C) 2 pounds D) 13 pounds

Answer: A
Objective: (1.5) Solve Apps: Linear Equations

**Solve the equation.**

10) $-3.7q + 1.2 = -2.4 - 1.9q$

A) −5 B) 2 C) 1.5 D) 1.0

Answer: B
Objective: (1.5) Solve Linear Equation (Fractions, Decimals)

11) $2(2z - 4) = 3(z + 4)$

A) 4 B) 20 C) 6 D) −4

Answer: B
Objective: (1.5) Solve Linear Equation Algebraically

**Solve the problem.**

12) A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below. By using linear regression, the following function is obtained: $y = 88.6 - 1.86x$ where x is the number of hours spent in the lab and y is grade on the test. Use this function to predict the grade of a student who spends 7 hours in the lab.

| Number of hours spent in lab | Grade (percent) |
|---|---|
| 10 | 96 |
| 11 | 51 |
| 16 | 62 |
| 9 | 58 |
| 7 | 89 |
| 15 | 81 |
| 16 | 46 |
| 10 | 51 |

A) 77.0 B) 71.6 C) 75.6 D) 88.6

Answer: C
Objective: (1.6) Solve Apps: Use Linear Model

**Use the table to determine whether the data set represented is exactly linear, approximately linear, or nonlinear.**

13)

| Foot Length (cm) | 25 | 26 | 28 | 29 | 30 | 31 | 32 | 33 | 37 |
|---|---|---|---|---|---|---|---|---|---|
| Forearm Length (cm) | 24 | 25 | 28 | 30 | 31 | 30 | 31 | 33 | 37 |

A) Exactly linear B) Nonlinear C) Approximately linear

Answer: C
Objective: (1.6) Determine If Table Shows Linear Data

**Solve the problem.**

14) The paired data below consist of the temperatures on randomly chosen days and the amount a certain kind of plant grew (in millimeters). By using linear regression, the following function is obtained: $y = 14.6 + 0.211x$ where x is temperature and y is growth in millimeters. Use this function to predict the growth of a plant if the temperature is 60.

| Temp | 62 | 76 | 50 | 51 | 71 | 46 | 51 | 44 | 79 |
|---|---|---|---|---|---|---|---|---|---|
| Growth | 36 | 39 | 50 | 13 | 33 | 33 | 17 | 6 | 16 |

A) 27.74 mm B) 26.00 mm C) 27.26 mm D) 28.22 mm

Answer: C
Objective: (1.6) Solve Apps: Use Linear Model

**Provide an appropriate response.**

15) A pediatric speech therapist started her own practice in 1990. The function y = 3.2 x + 10.53 models the number of patients she treated each year, where x is the number of years after 1990. The model was found using data for the years between 1990 and 1998. What does the model estimate as the number of patients in 2000? Round to the nearest whole number. Is this interpolation or extrapolation?

A) 43; interpolation B) 44; interpolation C) 43; extrapolation D) 45; extrapolation

Answer: C
Objective: (1.6) *Know Concepts: Fitting Lines; Modeling Linear Functions

16) A pediatric speech therapist started her own practice in 1990. The function y = 3.2 x + 10.53 models the number of patients she treated each year, where x is the number of years after 1990. The model was found using data for the years between 1990 and 1998. What does the model estimate as the number of patients in 1995? Round to the nearest whole number. Is this interpolation or extrapolation?

A) 25; extrapolation B) 29; interpolation C) 27; extrapolation D) 27; interpolation

Answer: D
Objective: (1.6) *Know Concepts: Fitting Lines; Modeling Linear Functions

**Write the best–fit linear model for the data.**

17) A pediatric speech therapist started her own practice in 1990. The table below shows the number of children she treated each year from 1990 to 1998. Align the data to the number of years past 1990 and fit a linear model to the data.

| Year | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|
| Number of Patients | 11 | 15 | 16 | 20 | 23 | 25 | 29 | 34 | 37 |

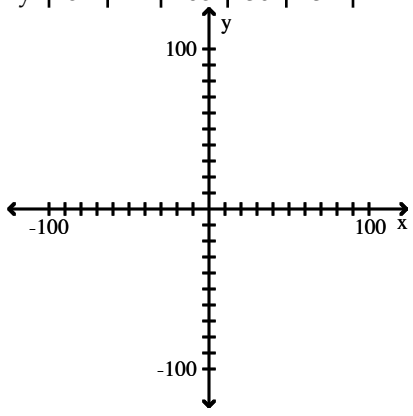
A) y = 3.2 x + 10.53 B) y = 11x + 2 C) y = 10.53x + 3.2 D) y = 2x + 11

Answer: A
Objective: (1.6) Solve Apps: Write Best–Fit Linear Model for Data

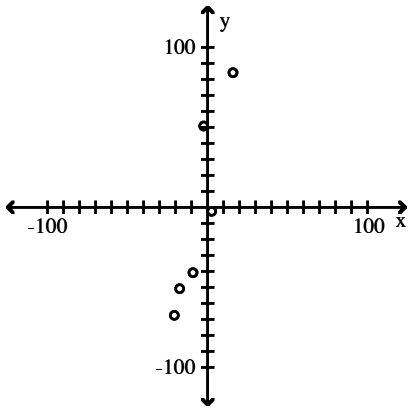
**Construct a scatter plot of the data in the table.**

18)

| x | 16 | –9 | –20 | –1 | –16 | 3 |
|---|---|---|---|---|---|---|
| y | –84 | 41 | 68 | –50 | 52 | 4 |



A)

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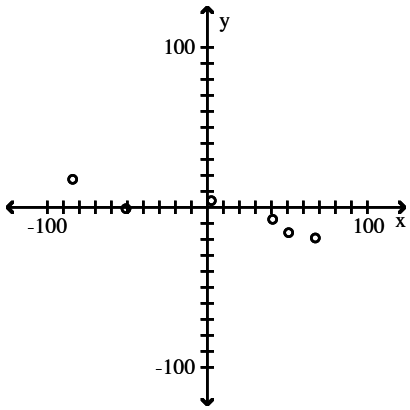


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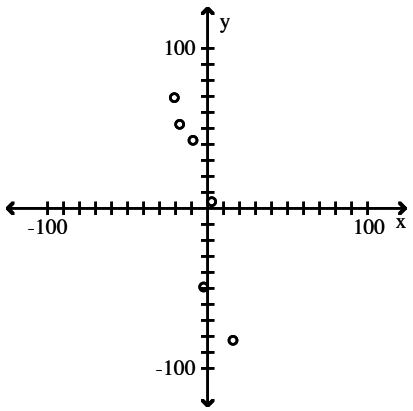


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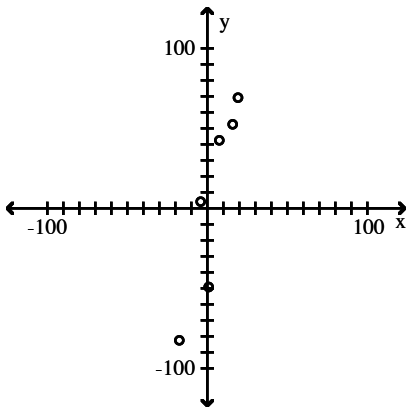
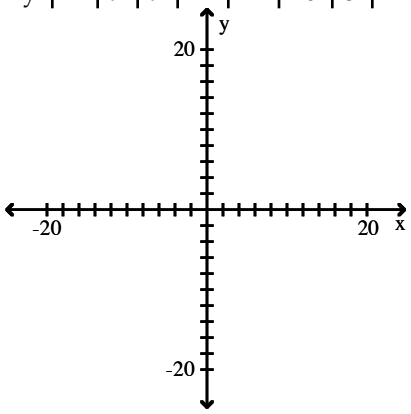


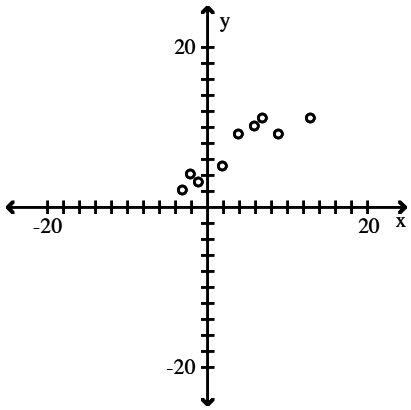

Answer: C
Objective: (1.6) Create Scatter Plot Given Table

19)

| x | -3 | 4 | 9 | 7 | 13 | 6 | 2 | -2 | -1 |
|---|---|---|---|---|---|---|---|---|---|
| y | 2 | 9 | 9 | 11 | 11 | 10 | 5 | 4 | 3 |



A)

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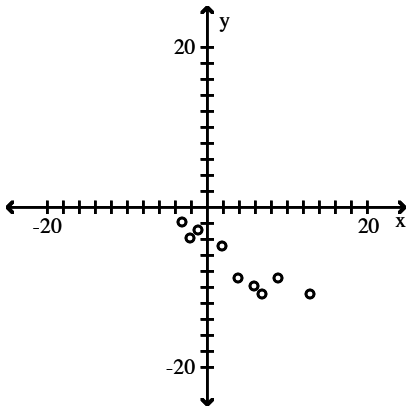


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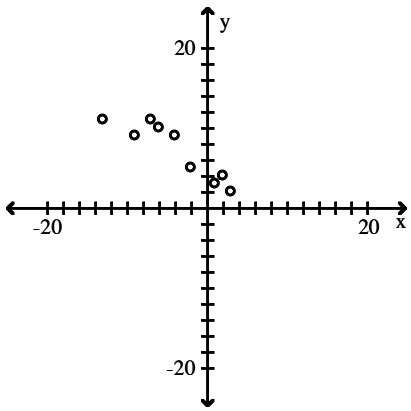


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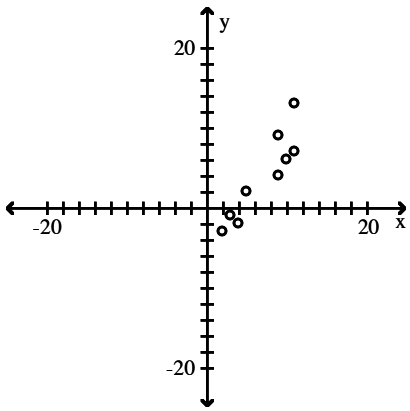


Answer: A
Objective: (1.6) Create Scatter Plot Given Table

**Write the best–fit linear model for the data.**

20) Managers rate employees according to job performance and attitude. The results for several randomly selected employees are given below.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Performance | 59 | 63 | 65 | 69 | 58 | 77 | 76 | 69 | 70 | 64 |
| Attitude | 72 | 67 | 78 | 82 | 75 | 87 | 92 | 83 | 87 | 78 |

A) y = 2.81 + 1.35x B) y = 92.3 – 0.669x C) y = 11.7 + 1.02x D) y = –47.3 + 2.02x

Answer: C
Objective: (1.6) Solve Apps: Write Best–Fit Linear Model for Data