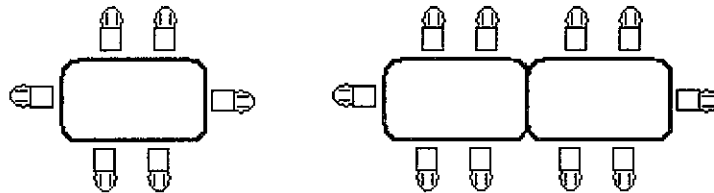


Name _____

Patterns

1. Sylvester's Pizzeria has a party room to accommodate pizza parties. They have rectangular tables that can be placed together end-to-end to sit large groups of people together. Some sample seating arrangements are shown below.

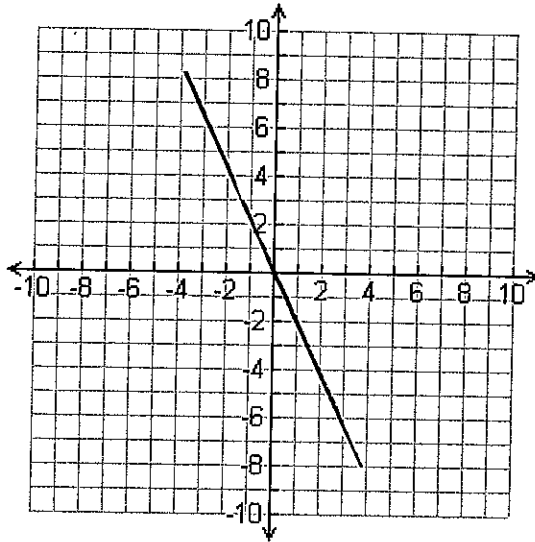


Which of the following expressions can be used to determine the number of people who can sit as a group if t tables are joined together?

- A. $2(2t + 1)$
- B. $4(t + 1)$
- C. $3(t + 1)$
- D. $6t$

Patterns

2. All points from which of the following patterns would be contained on the given graph?



- A. $-4, -8, -12, -16, \dots$
 - B. $-3, -6, -9, -12, \dots$
 - C. $-2, -4, -6, -8, \dots$
 - D. $2, 4, 6, 8, \dots$
-

Patterns

3. The first five terms of a sequence are given below.

$$17, 26, 35, 44, 53, \dots$$

Determine which of the following formulas gives the n^{th} term of this sequence.

- A. $8 + 9n$
- B. $9 + 8n$
- C. $26 - 9n$
- D. $25 - 8n$

Relations & Functions

4. Which of the following tables represents a function?

A.

x	-13	-8	-4	-8
y	16	14	16	15

B.

x	-13	-8	-4	2
y	16	14	22	16

C.

x	-13	-8	-13	2
y	16	16	22	15

D.

x	-13	-8	-4	-4
y	16	14	16	15

Relations & Functions

5. Which of these t-tables represents a function?

x	$f(x)$	x	$f(x)$	x	$f(x)$	x	$f(x)$
-1	0	-1	3	0	-1	3	-1
0	1	0	1	-1	0	1	0
1	0	1	3	0	1	3	1
0	-1	2	5	3	2	5	2

W. **X.** **Y.** **Z.**

- A. Z
 - B. X
 - C. W
 - D. Y
-

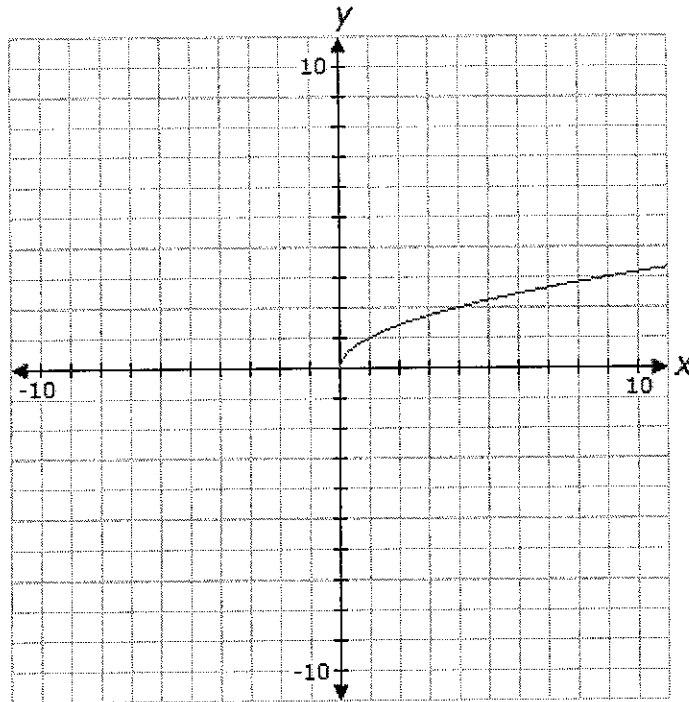
Relations & Functions

6. Which of the following relations describes a function?

- A. $\{(2, -2), (0, 0), (2, 2), (3, 3)\}$
 - B. $\{(9, -3), (4, -2), (4, 2), (9, 3)\}$
 - C. $\{(-3, 9), (-2, 4), (2, 4), (3, 9)\}$
 - D. $\{(-2, 0), (0, 2), (2, 0), (0, -2)\}$
-

Domain & Range

7.



What is the domain of the function shown above?

- A. $0 < x < \infty$
 - B. $0 \leq x < \infty$
 - C. $-\infty < x \leq 0$
 - D. $-\infty < x < \infty$
-

Domain & Range

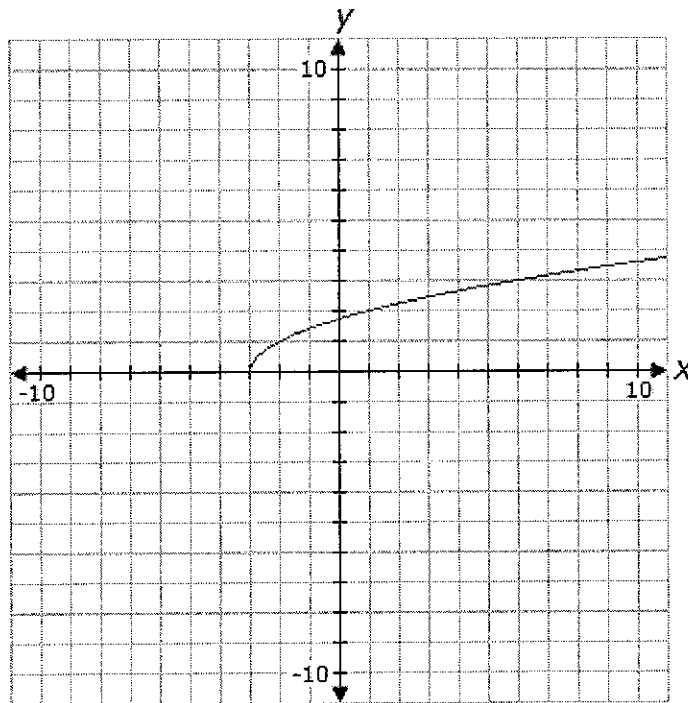
8. The elements of a function of x are $(54, 9)$, $(65, 1)$, and $(76, 13)$. What is the range of the function?

- A. $\{75\}$
 - B. $\{9, 54, 65\}$
 - C. $\{1, 9, 13\}$
 - D. $\{1, 9, 13, 54, 65, 76\}$
-

Domain & Range

9. Find the domain of the function below.

$$f(x) = \sqrt{x + 3}$$



- A. {all real numbers greater than or equal to negative three}
- B. {all real numbers greater than or equal to three}
- C. {all real numbers between and including zero and three}
- D. {all real numbers less than or equal to negative three}

Linear Functions

10. A rancher noticed that, typically, the first day he has a new horse the horse eats 17 pounds of hay. The second day on, the horse typically eats 24 pounds of hay per day.

Which equation could be used to determine the number of pounds, y , the horse will eat over x days?

- A. $y = 17x + 24$
 - B. $y = 24x + 17$
 - C. $y = 24(x + 17)$
 - D. $y = 24x - 17$
-

Linear Functions

11. The amount of Jerry's pay every week before taxes, J , is given below as a function of the number of overtime hours that he works (number of hours past 40), h .

$$J = \$493.60 + \$18.51 \cdot h$$

Assuming that Jerry is only paid for each whole hour that he works, how many total hours would Jerry have to work during a week to make at least \$900.00 ?

- A. 21
- B. 72
- C. 62
- D. 61

Linear Functions

12. The population of a small town, P , as a function of time, t , in years past 1940 is given below.

$$P = 2,285 + 75t$$

Year (t)	Population (P)
10	?
20	?
30	?
40	?
50	?
60	?

Use the given equation to complete the table above.

- A. 3,035; 3,785; 4,535; 5,285; 6,035; 6,785
- B. 2,285; 3,035; 3,785; 4,535; 5,285; 6,035
- C. 2,285; 2,360; 2,435; 2,510; 2,585; 2,660
- D. 2,360; 2,435; 2,510; 2,585; 2,660; 2,735

Rate of Change

13. The altitude of a plane above sea level, in feet, m minutes after departure is $293 + 500m$.

Which statement is correct?

- A. The plane's altitude decreases by 500 feet each minute after departure.
 - B. The plane's altitude increases by 500 feet each minute after departure.
 - C. The plane's altitude increases by 293 feet each minute after departure.
 - D. The plane's altitude decreases by 293 feet each minute after departure.
-

Rate of Change

14. Which statement describes the rate of change of the following function?

$$f(x) = -2x - 7$$

- A. The function has a varying rate of change when $x < 2$.
- B. The function has a constant rate of change, decreasing for all x at a rate of 7.
- C. The function has a constant rate of change, decreasing for all x at a rate of 2.
- D. The function has a varying rate of change when $x < 7$.

Rate of Change

15. Which of the following situations represents a linear relationship?

- A. A train travels 45 miles every hour after departing the station.
 - B. The value of a car is decreasing by 7 percent each year.
 - C. The area covered by a circular area rug depends on the radius of the rug.
 - D. The number of bacteria in a lab experiment triples every hour.
-

Write or Identify a Linear Equation

16. A line with a slope of $\frac{1}{2}$ passes through $(-5, -4)$. Write the equation of the line in general form.

- A. $y + 4 = \frac{1}{2}(x + 5)$
- B. $x - 2y = 3$
- C. $y = \frac{1}{2}x - \frac{3}{2}$
- D. $x + 2y = 9$

Write or Identify a Linear Equation

A line passes through the point $(6,1)$ and has a slope of -2 . Find
17. the equation of the line.

- A. $y = -2x + 11$
 - B. $y = 2x + 11$
 - C. $y = -2x + 13$
 - D. $y = 2x + 13$
-

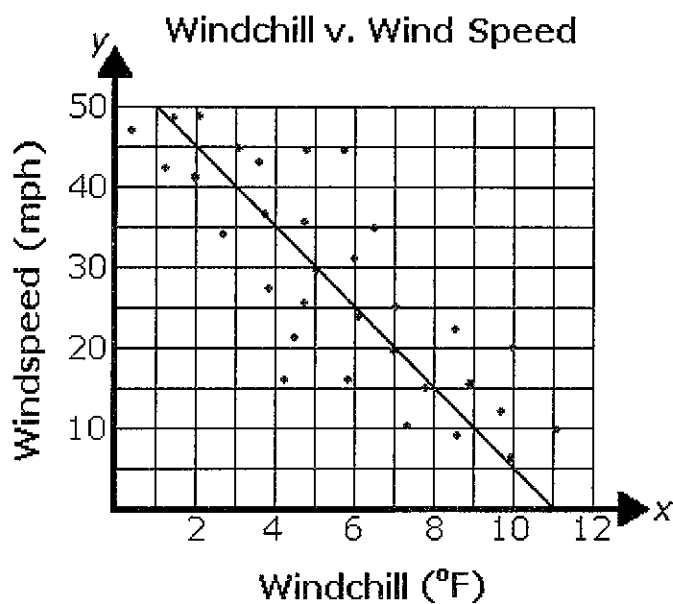
Write or Identify a Linear Equation

A linear function has a y -intercept of -2 and a slope of $\frac{7}{4}$. What
18. is the equation of the line?

- A. $y = \frac{7}{4}x - 2$
- B. $y = \frac{7}{4}x - \frac{7}{2}$
- C. $y = -2x - \frac{7}{4}$
- D. $y = \frac{7}{4}x + 2$

Best-Fit Lines

19.

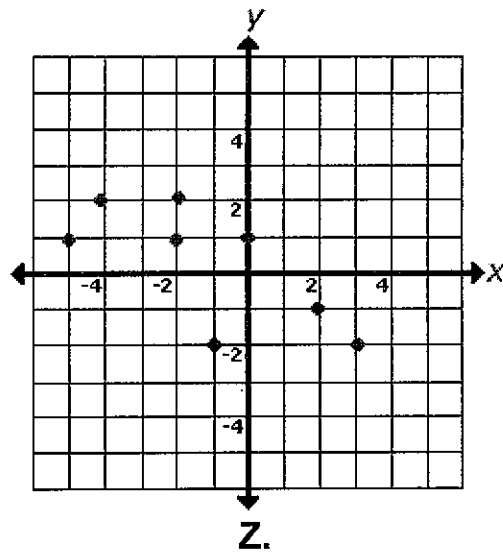
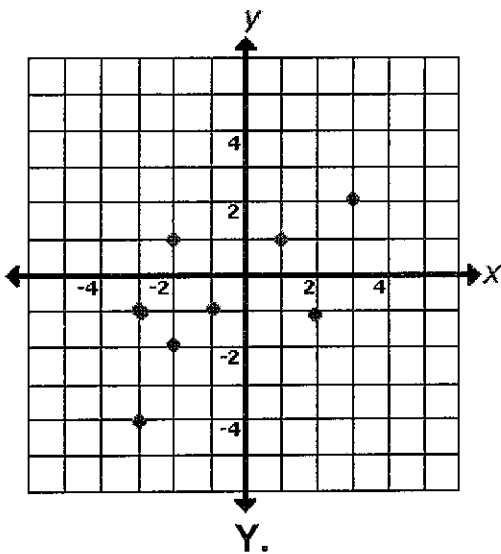
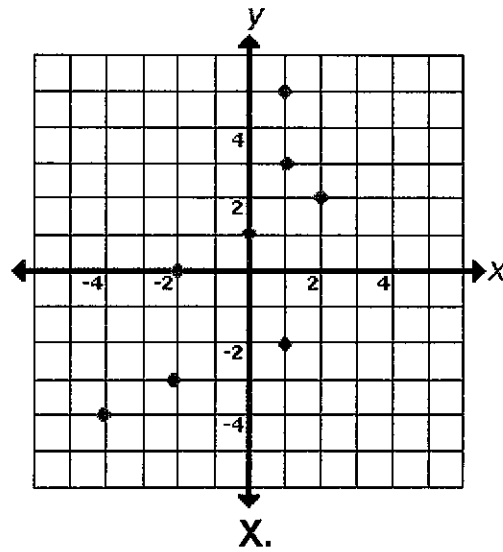
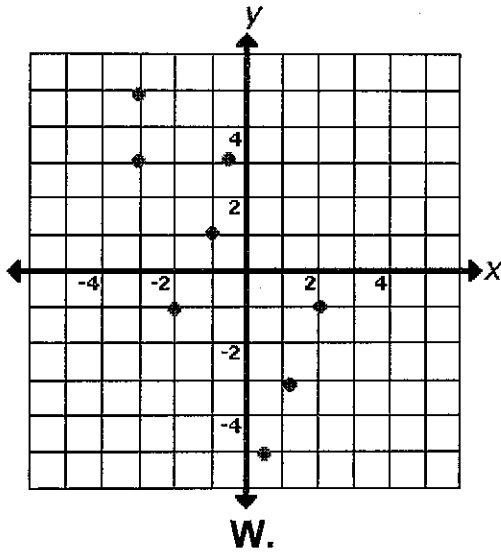


A science class graphed windchill and wind speed for every day in November. What is the equation of the line of best fit above?

- A. $y = -x + 55$
- B. $y = -5x + 55$
- C. $y = x + 55$
- D. $y = 5x + 55$

Best-Fit Lines

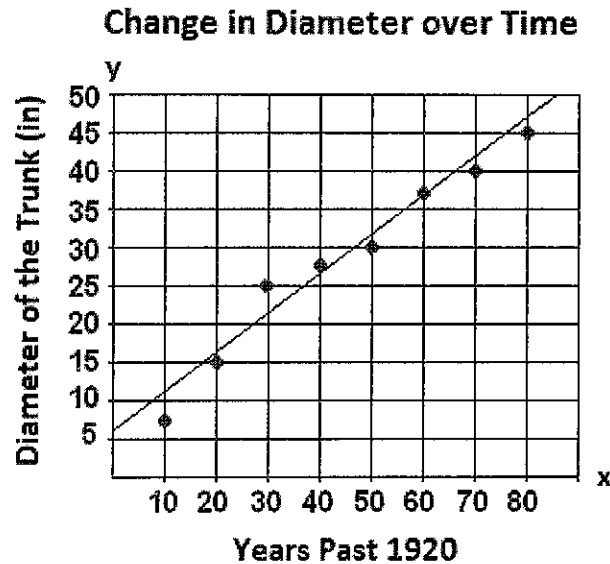
20. Which scatterplot most likely has a line of best fit represented by $y = -2x + 1$?



- A. Y
- B. W
- C. Z
- D. X

Best-Fit Lines

21. Crystal's grandmother planted a tree on the farm in 1920. She measured the tree trunk's diameter every 10 years and recorded the measurements. The scatter plot below shows the progress of the diameter. (The year 1930 is equivalent to 10 on the graph.)



$$y = 0.507x + 5.543$$

Looking at the line of best fit equation shown below the graph, what will be the approximate diameter of the tree in 2010?

- A. 51.173 in
- B. 45.63 in
- C. 56.243 in
- D. 46.103 in

Measures of Dispersion & Central Tendency

22. Mike, Shannon, Layla, and Rachel each recorded the grades they received on five tests in their math class in the table below.

Student	Test Scores				
	Test 1	Test 2	Test 3	Test 4	Test 5
Mike	83	73	70	93	75
Shannon	79	67	66	71	75
Layla	72	78	77	70	71
Rachel	81	59	54	60	64

What is the range of Shannon's scores?

- A. 27
 - B. 8
 - C. 13
 - D. 14
-

Measures of Dispersion & Central Tendency

23. What is the range of the following set of numbers?

49.91, 47.41, 54.91, 56.91, 53.41, 49.41, 47.91, 54.91, 45.91

- A. 9
- B. 51.19
- C. 11
- D. 56.91

Measures of Dispersion & Central Tendency

24. The scores on Ms. Glowson's math tests are listed below.

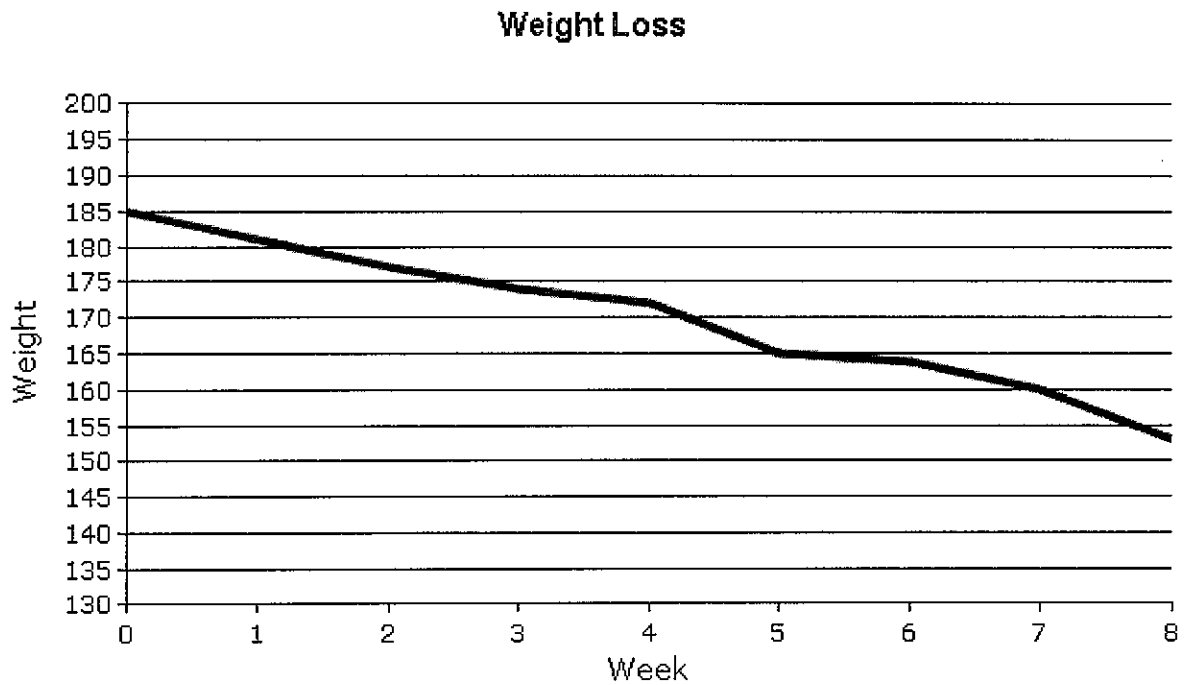
70, 59, 82, 86, 83, 74, 75, 81, 65, 58, 66

What is the interquartile range of the scores?

- A. 17
- B. 65
- C. 28
- D. 82

Data Displays and Analysis

25.

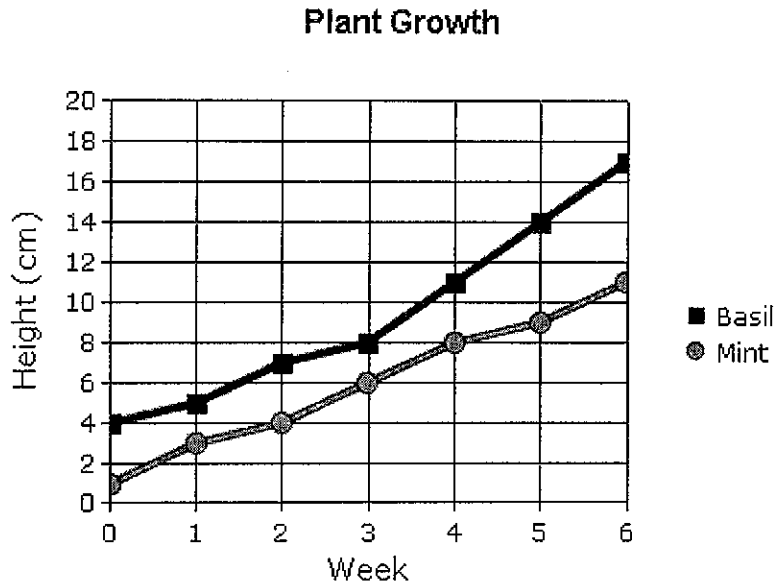


Nancy went on a diet over an eight week period. She recorded her weight each week. Which of the following is the closest to the range of her weights?

- A. 22 lbs
- B. 32 lbs
- C. 42 lbs
- D. 47 lbs

Data Displays and Analysis

26. Halle planted mint and basil plants in her herb garden. She measured the height of each herb plant at the end of each week for six weeks. The results are shown in the line graph below.

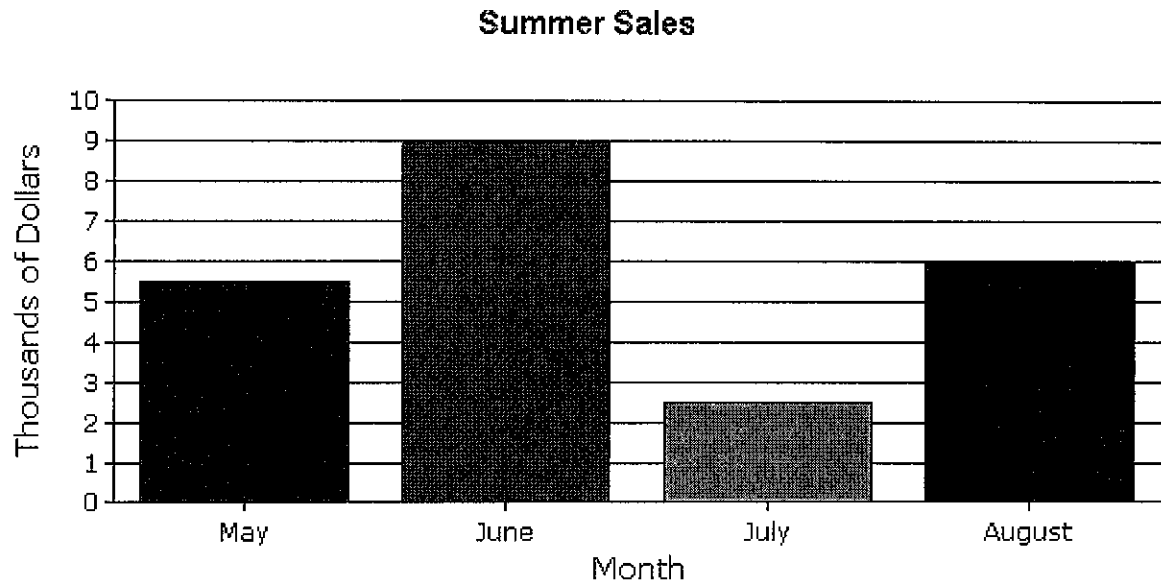


What is the difference in the ranges for both herbs during the six weeks shown in the graph?

- A. 5 cm
- B. 8 cm
- C. 3 cm
- D. 4 cm

Data Displays and Analysis

27.



A company made a bar graph showing the amount of sales for each month in thousands of dollars. Which of the following is closest to the mean amount of sales for the four-month period?

- A. \$5,750
- B. \$6,250
- C. \$6,375
- D. \$5,250

Probability - Compound Events

28. A single six-sided die is rolled twice. What is the probability of rolling an odd number on the first roll and an even number on the second roll?

A. $\frac{1}{36}$













B. $\frac{1}{4}$

C. $\frac{1}{12}$

D. $\frac{1}{6}$

Probability - Compound Events

29.

						
	2	3	4	5	6	7
	3	4	5	6	7	8
	4	5	6	7	8	9
	5	6	7	8	9	10
	6	7	8	9	10	11
	7	8	9	10	11	12

An experiment consists of rolling two fair dice and adding the dots on the two sides facing up. What is the probability that the sum of the dots is 6 or 9?

- A. $\frac{2}{9}$
- B. $\frac{7}{36}$
- C. $\frac{1}{4}$
- D. $\frac{1}{6}$

Probability - Compound Events

30. In an experiment a six-sided die is rolled a number of times. The results are shown below.

Number Rolled	Number of Times Rolled
1	6
2	8
3	3
4	3
5	7
6	3

Based on these results, what is the experimental probability of rolling either a 5 or 6?

- A. $\frac{1}{3}$
- B. $\frac{11}{30}$
- C. $\frac{7}{30}$
- D. $\frac{5}{12}$

Answers

1. A
2. C
3. A
4. B
5. B
6. C
7. B
8. C
9. A
10. B
11. C
12. A
13. B
14. C
15. A
16. B
17. C
18. A
19. B
20. B
21. A
22. C
23. C
24. A
25. B
26. C
27. A
28. B
29. C
30. A