

1. A caterer's recipes are each designed to make 4 servings. The ingredients are shown in the matrix below.

	Cake	Bread	Cookies
Eggs	3	2	1
Flour (cups)	3	4	2
Sugar (cups)	2	1	0.5

How much flour is needed to make 60 servings of bread and 60 servings of cake?

- A 7 cups
B 9 cups
C 105 cups
D 420 cups
-
2. Given $X = \begin{bmatrix} 2 & 3 & 1 \\ -1 & 5 & 4 \end{bmatrix}$ and $Y = \begin{bmatrix} 6 & 0 & -2 \\ 4 & 1 & 5 \end{bmatrix}$. What is $2X - 3Y$?

A $\begin{bmatrix} -14 & 6 & 8 \\ -14 & 7 & -7 \end{bmatrix}$

B $\begin{bmatrix} 22 & 6 & -4 \\ 10 & 13 & 23 \end{bmatrix}$

C $\begin{bmatrix} -14 & 3 & 8 \\ -14 & 7 & -7 \end{bmatrix}$

D $\begin{bmatrix} 22 & 9 & -4 \\ 10 & 13 & 23 \end{bmatrix}$

3. The matrix below shows the yearly sales of belts, hats, pants, and shirts at a local store over three years.

	Year 1	Year 2	Year 3
Belts	1,240	1,450	1,102
Hats	1,655	1,988	2,133
Pants	2,678	3,131	2,965
Shirts	4,544	4,417	4,782

Which item shows a decrease in yearly sales from Year 1 to Year 2?

- A Belts
- B Hats
- C Pants
- D Shirts

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4. If y varies directly as x , and $y = 12$ when $x = 72$, then what is the value of x when $y = 3$?

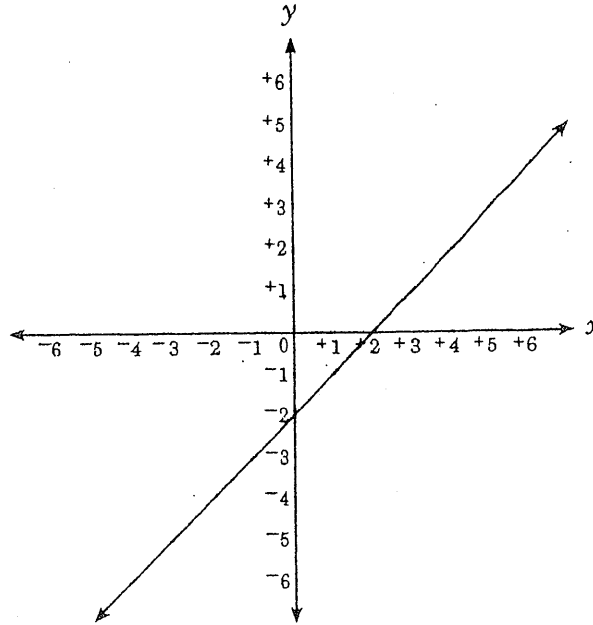
- A 18
- B 2
- C $\frac{1}{2}$
- D $\frac{1}{6}$

5. A taxi ride cost \$29.40. The driver charged \$3 plus \$0.40 per 0.2 mile traveled. How far did the taxi travel on this trip?

- A 9.8 miles
- B 13.2 miles
- C 66 miles
- D 73.5 miles

6. The average price of a movie ticket in the year 2000 was \$5.39. The average price of a movie ticket in the year 2004 was \$6.21. Assuming the increase is linear, what would be the **approximate** price of a movie ticket in the year 2009?
- A \$6.42
B \$7.03
C \$7.24
D \$8.06
7. At the airport, the new runway will be parallel to a nearby highway. On the scale drawing of the airport, the equation that represents the highway is $6y = 8x + 11$. Which equation could represent the new runway?
- A $9y = 12x + 5$
B $9x = 12y + 8$
C $12y = -9x + 2$
D $12x = -9y + 4$
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8. Martha has \$180. She needs a total of \$2,000 to start an account. She earns \$60 per day working, of which she saves \$50. Which equation can she use to determine the number of days, d , she needs to work to reach her goal of \$2,000?
- A $2,000 = 60d + 180$
B $2,000 = 60d - 180$
C $2,000 = 50d + 180$
D $2,000 = 50d - 180$
9. The cost of mailing a box varies directly with the weight of the box in pounds. It costs \$8 to mail a 5-pound box. How much would it cost to mail a 12-pound box?
- A \$19.20
B \$16.00
C \$15.00
D \$7.50

10. For the line graphed below, the x -intercept is changed to -2 and the slope is unchanged.



How will the graph of the line change?

- A The new line will be parallel to the original line.
B The new line will be perpendicular to the original line.
C The new line will intersect the original line.
D The new line will be the same line as the original line.
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11. What value of x makes the equation true?
- $$3\begin{bmatrix} 5 & -1 \\ x & 2 \end{bmatrix} - \begin{bmatrix} 4 & 6 \\ -3 & 8 \end{bmatrix} = \begin{bmatrix} 11 & -9 \\ 9 & -2 \end{bmatrix}$$
- A 0
B 2
C 4
D 6
12. The equation $y = 461.19x + 3,492$ represents the value of a work of art from 1964 to 2005. What does the number 461.19 represent?
- A value of the work of art in 1964
B value of the work of art in 2005
C yearly decrease in value
D yearly increase in value

13. An algebra teacher recorded the number of boys and girls absent in her class last week. On Monday, 3 boys and 2 girls were absent. On Tuesday, 1 boy and no girls were absent. On Wednesday, no boys and 5 girls were absent. On Thursday, no boys or girls were absent. On Friday, 1 boy and 3 girls were absent. Which matrix correctly displays the number of boys and girls absent each day last week?

A $\begin{bmatrix} 3 & 2 & 1 & 0 & 0 \\ 5 & 0 & 0 & 1 & 3 \end{bmatrix}$

B $\begin{bmatrix} 3 & 1 & 5 & 0 & 3 \\ 2 & 0 & 0 & 0 & 1 \end{bmatrix}$

C $\begin{bmatrix} 3 & 1 & 0 & 0 & 1 \\ 2 & 0 & 5 & 0 & 3 \end{bmatrix}$

D $\begin{bmatrix} 3 & 0 & 1 & 0 & 0 \\ 1 & 0 & 2 & 5 & 3 \end{bmatrix}$

14. Mr. Vang sells guitars, drums, and violins. The matrix below displays the sales for March and April.

	Guitars	Drums	Violins
March	27	51	75
April	42	93	60

In May and June his sales are a third of March's sales and April's sales, respectively. Which matrix displays the sales for May and June?

A

	Guitars	Drums	Violins
May	9	17	25
June	14	31	20

B

	Guitars	Drums	Violins
May	9	51	75
June	14	93	60

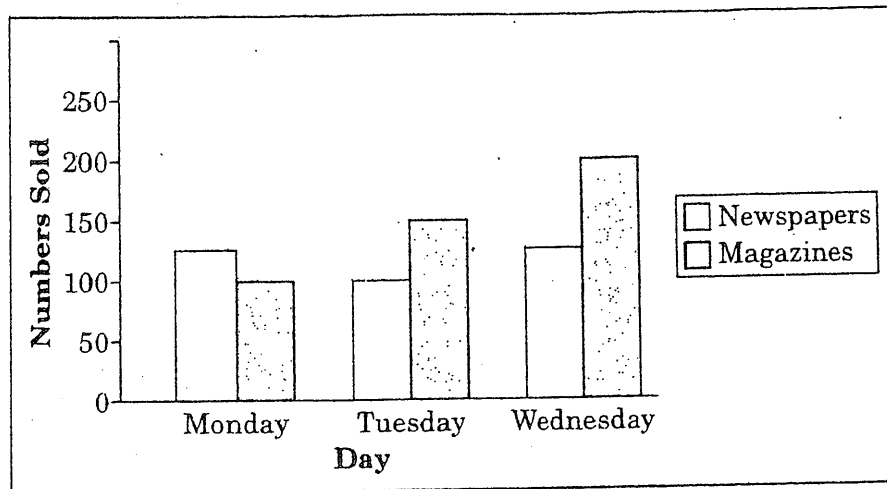
C

	Guitars	Drums	Violins
May	81	153	225
June	126	279	180

D

	Guitars	Drums	Violins
May	81	51	75
June	126	93	60

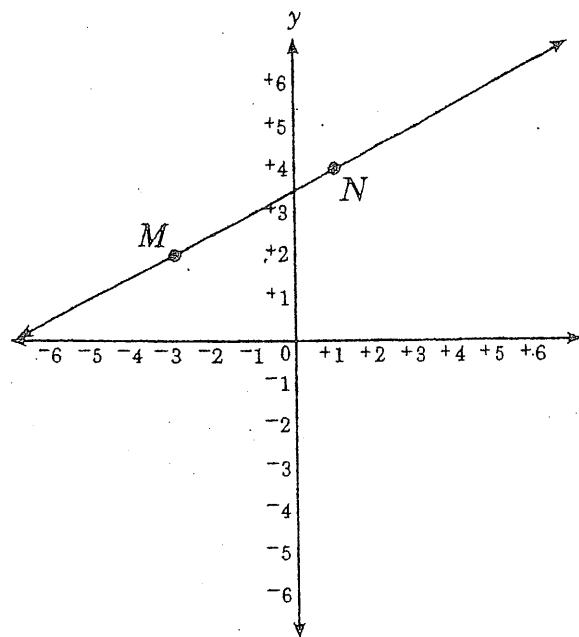
15. The graph below displays the number of newspapers and magazines sold at a store for three days in one week.



Which matrix correctly displays this information?

- A
- | | Newspapers | Magazines |
|-----------|------------|-----------|
| Monday | 100 | 125 |
| Tuesday | 100 | 150 |
| Wednesday | 125 | 200 |
- B
- | | Newspapers | Magazines |
|-----------|------------|-----------|
| Monday | 100 | 100 |
| Tuesday | 125 | 125 |
| Wednesday | 150 | 200 |
- C
- | | Newspapers | Magazines |
|-----------|------------|-----------|
| Monday | 125 | 100 |
| Tuesday | 100 | 150 |
| Wednesday | 125 | 200 |
- D
- | | Newspapers | Magazines |
|-----------|------------|-----------|
| Monday | 125 | 100 |
| Tuesday | 150 | 100 |
| Wednesday | 200 | 125 |

16. Which is an equation of a line that is parallel to \overleftrightarrow{MN} ?



- A $2x - y = 3$
- B $x - 2y = 3$
- C $8x + 4y = 4$
- D $9x + 18y = -9$
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17. The endpoints of \overline{GH} are $G(-3, 7)$ and $H(2, 9)$. What are the coordinates of the midpoint of \overline{GH} ?
- A $(8, \frac{1}{2})$
- B $(\frac{1}{2}, 8)$
- C $(-1, \frac{5}{2})$
- D $(\frac{5}{2}, -1)$
18. For the line $y = mx + b$, where $m > 0$ and $b < 0$, what change would occur if b is multiplied by -1 and m remains the same?
- A The y-intercept would become negative.
- B The slope would become negative.
- C The resulting line would be perpendicular to the original line.
- D The resulting line would be parallel to the original line.

19. On a map of downtown, 12th Street is perpendicular to Avenue J. The equation $y = -4x + 3$ represents 12th Street. What is the equation representing Avenue J if it passes through the point $(8, 16)$?

A $y = -4x + 48$

B $y = -4x + 14$

C $y = \frac{1}{4}x + 3$

D $y = \frac{1}{4}x + 14$

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20. The matrix below displays prices of pizzas at different pizza shops.

	Sal's Pizza	Quick Stop Pizza	Romero's Pizza	John's Pizza
Small	\$8.00	\$6.00	\$9.50	\$7.00
Medium	\$10.00	\$9.00	\$12.75	\$10.00
Large	\$12.00	\$13.00	\$14.75	\$13.00

Mrs. Hughes is ordering 6 large pizzas and 2 medium pizzas. Which pizza shop will charge the least for the order?

- A Sal's Pizza
- B Quick Stop Pizza
- C Romero's Pizza
- D John's Pizza

21. The matrices below display the number of wins, losses, and ties during two seasons.

First Season				Second Season			
	Wins	Losses	Ties		Wins	Losses	Ties
Team 1	13	15	12	Team 1	19	14	9
Team 2	17	12	10	Team 2	14	19	10

What is the total number of losses by Team 2 for these two seasons?

- A 27
- B 31
- C 33
- D 60

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22. The matrix below shows women's real hourly wages for the period of years from 1975 to 1995, based on level of education.

	High School Diploma	College Degree
1975	\$9.27	\$13.24
1980	\$9.33	\$12.64
1985	\$9.31	\$13.59
1990	\$9.24	\$14.73
1995	\$9.21	\$15.28

Over the 20-year period, how did the real hourly wages of women with only a high school diploma compare with the real hourly wages of women with a college degree?

- A Both groups showed an overall decrease in hourly wages.
- B Both groups showed an overall increase in hourly wages.
- C The real hourly wages for women with only a high school diploma generally increased, while the real hourly wages for women with a college degree generally decreased.
- D The real hourly wages for women with a college diploma generally increased, while the real hourly wages for women with only a high school diploma generally decreased.

23. The table below shows the costs for visits of different lengths by cleaning companies in a town. The length of a visit is represented by x , and the cost of a visit is represented by y . Each cleaning company charges a flat fee for visiting the house or apartment and an hourly rate.

Length of Visit (in hours)	Cost of Visit
2	\$72
2	\$76
3	\$91
3.5	\$103
4	\$105
4.5	\$113
5.5	\$135

The equation of the line of best fit for the data is $y = 16.8x + 40.5$. What does the y -intercept represent?

- A length of a visit
- B cost of a visit
- C flat fee
- D hourly rate

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24. An amusement park charges \$15 to enter the park and an additional fee for each time a guest rides a roller coaster. Susan rode 6 times on a roller coaster. Her total payment was \$33. Maria rode 11 times on a roller coaster. What was her total payment?

- A \$44
- B \$48
- C \$50
- D \$58

25. The Outboard Motor Company can produce 50 motors in 4 weeks. Assuming a direct variation, how many motors can the company produce in 10 weeks?

- A 75 motors
- B 125 motors
- C 150 motors
- D 200 motors

26. The table below displays the average number of pounds of milk and milk fat produced per cow in seven states in 2001.

State	Pounds of Milk	Pounds of Milk Fat
Colorado	21,400	760
Georgia	16,700	607
Maryland	15,800	578
Nebraska	16,200	601
Oklahoma	14,500	524
Tennessee	14,500	530
Utah	17,600	640

Source: National Agricultural Statistics Service,
U.S. Department of Agriculture

In North Carolina in 2001, the production of milk per cow was 17,200 pounds. According to the line of best fit for the data above, **approximately** how many pounds of milk fat were produced per cow in North Carolina?

- A 543
- B 560
- C 610
- D 623

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27. Mr. Hanson recorded the typing speeds (in words per minute) of 25 students and their weeks of experience. The line of best fit for the data is $y = 4.4x + 18.9$, where x is the number of weeks of experience of a student and y is the student's typing speed. What is the meaning of the y -intercept for this set of data?

- A the average typing speed of the students
- B the highest typing speed recorded
- C the improvement in typing speed per week for the average student
- D the typing speed of a student with no experience

28. In 2000 Jim planted a tree that was $4\frac{1}{2}$ feet tall. In 2005 the tree was $15\frac{3}{4}$ feet tall. Assuming the growth of the tree is linear, what was the rate of growth of the tree?

A $2\frac{1}{4}$ feet per year
B $4\frac{1}{2}$ feet per year
C $5\frac{5}{8}$ feet per year
D $11\frac{1}{4}$ feet per year

29. A computer is purchased for \$1,200 and depreciates at \$140 per year. Which linear equation represents the value, V , of the computer at the end of t years?

A $V = 1,200 - 140t$
B $V = 140t$
C $V = 140t - 1,200$
D $V = 140(1,200 - t)$

30. Tyler wants to buy a video-game system for \$375. He can pay for the system in 12 months if he pays \$75 now and \$25 each month. How will the number of monthly payments be affected if Tyler pays \$75. now and \$30 each month?

A He will make 10 fewer monthly payments
B He will make 5 fewer monthly payments
C He will make 3 fewer monthly payments
D He will make 2 fewer monthly payments