1. When Justin goes to work, he drives at an average speed of 55 miles per hour. It takes

   about 1 hour and 30 minutes for Justin to arrive at work. His car travels about 30 miles per

   gallon of gas. If gas costs $3.45 per gallon, how much money does Justin spend to travel

   each mile to work? (modified)   N.Q.3

   [handwritten: 3.45/30 .115]

   [handwritten: $\frac{\$3.45}{1 \text{ GALLON}} \cdot \frac{1 \text{ GALLON}}{30 \text{ MILES}} = 0.115$]

   A. $1.43   C. $6.33

   [handwritten: ≈ 12¢]

   B. $0.70   D. $0.12 *

---

2. A rectangular prism has a volume of 3 m^3, a length of 30 cm, and a width of 40 cm. What is

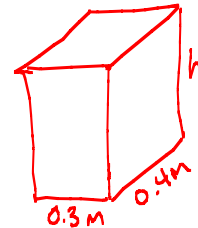   the height of the prism? (modified)   N.Q.2

   [handwritten: 30 cm = 0.3 m   40 cm = 0.4 m]

   [handwritten: $V = \ell \cdot w \cdot h$]

   [handwritten: $3 = (0.3)(0.4)h$]

   [handwritten: $\frac{3}{.12} = \frac{.12h}{.12}$]

   A. .25 cm   *[handwritten: 3/.12   25]*   C. 25 cm

   B. 250 cm   D. 25 m*

   [handwritten diagram of rectangular prism labeled h, 0.4m, 0.3m]

---

3. The number of terms in the following expression after being simplified and the leading coefficient

   3x^2 + 6 +7x − 4x^3 + 8 − 3x^2 A.SSE.1a

   [handwritten: −4x³ + 7x + 6]

   A. 2 terms and leading coefficient 3   C. 3 terms and leading coefficient -4   *

   B. 6 terms and leading coefficient -3   D. 2 terms and leading coefficient 7

---

4. A certain population of bacteria has a growth rate of 0.04 bacteria/hour. The formula

   for the growth of the bacteria's population is A = P$_0$(2.71828)$^{0.04t}$, where P$_0$ is the original population

   and t is the time in hours.

   If you begin with 400 bacteria, approximately how many of the bacteria can you expect

   after 100 hours? (modified)   A.SSE.1b

   [handwritten: $A = 400 (2.71828)^{.04(100)}$]

   A. 40,000   C. 271,828

   *[handwritten: 400(2.71828)^(.04*100) 21839.20125]*

   B. 888,601,488   D. 21839 *

5. Your basic monthly charge for cell phone service is $35, which includes 250 free minutes. You pay a fee for each extra minute you use. One month you paid $7.50 for 25 extra minutes. Find your total bill if you use 47 extra minutes.   N.Q.1

handwritten: 7.5/25
handwritten: 35+47(.3)
handwritten: .3
handwritten: 49.1

A. $42.50

C. $49.10   *

B. $123.36

D. $95.90

handwritten: EXTRA MINUTES : $\frac{7.50}{25} = 0.30$ COST
handwritten: TOTAL BILL = $35 + 47(0.3) = $49.10

6. A runner ran at a rate of 0.12 mile per minute for 50 minutes on Monday, Wednesday and Friday. On Tuesday and Saturday the runner ran 0.14mile per minute for 60 minutes, and on Sunday the runner ran 0.08 mile per minute for 1 hour 30 minutes. What was the total mileage the runner covered during the week?   N.Q.1

handwritten: 0.12(50) + 0.14(60) + 0.12(50) + 0.12(50) + 0.14(60) + 0.08(90)
handwritten: MON   TUES   WED   FRI   SAT.   SUNDAY
handwritten: 1.5 hr = 90 min

A.   42.8 miles

handwritten: .12(50)+.14(60)+ .12(50)+.12(50)+ .14(60)+.08(90) = 42

C.   144 miles

B.   28 miles

D.   42 miles   *

7. Identify the inequality graphed to the right.   A.CED.2

A. $y < -\dfrac{4}{3}x - 2$

B. $y \leq -\dfrac{4}{3}x - 2$ *

C. $y \geq \dfrac{3}{4}x - 2$

D. $y \leq -\dfrac{3}{4}x - 2$

handwritten on graph: RISE -4 / RUN 3 / M = RISE/RUN = -4/3 / Y-INT = -2
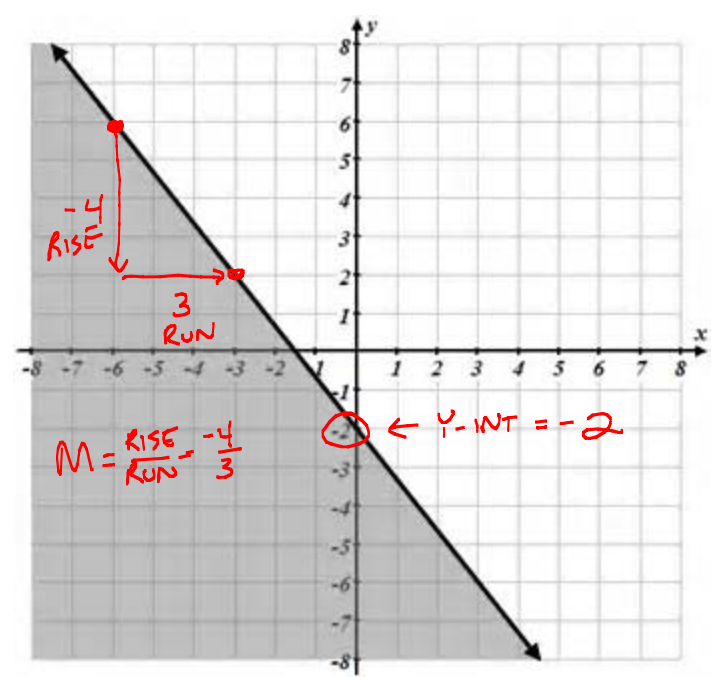
8. If $n = 6$ then determine the value of $n^2 - 4n$. (copied)   A.SSE.1

handwritten: = (6)^2 - 4(6) = 36 - 24 = 12

A.   −12

C.   12   *

B.   −18

D.   36

9. Jim owns a business that produces bicycles. He must bring in more in revenue than he pays out in costs in order to turn a profit.

   JIM EARNS $5 IN NET PROFIT FOR EACH BICYCLE

   • It costs $5 in labor and materials to make each of his bicycles.

   • His rent each month for his factory is $3500.

   $5x - 3500 > 0$
   $+3500 \quad 3500$

   • He sells each bicycle for $10.

   $\frac{5x}{5} > \frac{3500}{5}$

   How many bicycles does Jim need to sell each month to make the minimum profit? (modified) A.SSE.1b

   A.   35

   C.   701   *

   $X > 700$

   B.   350

   D.   600

---

10. Which equation below matches the graph shown: A.CED.2

   A. $y = -\dfrac{2}{3}x + 4$ *

   B. $y = -\dfrac{2}{3}x + 6$

   C. $y = -\dfrac{3}{2}x + 4$

   D. $y = -\dfrac{3}{2}x + 6$

   RISE -2 *3 RUN* *Y-INT =4*

   $M = \frac{RISE}{RUN} = \frac{-2}{3}$

---
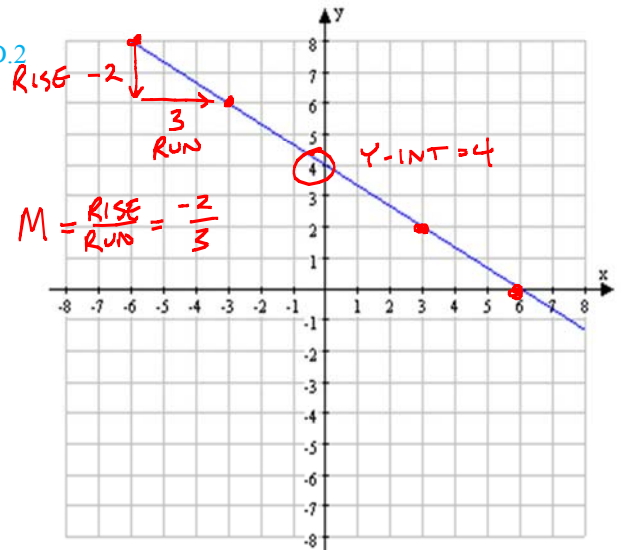
11. The operating budget for a small food side stand in a park should be under $12000 for the year. How many of the years illustrated below did the pizza food side stand go over budget?   N.Q.2

   A.   2001

   B.   3   *

   C.   2002

   D.   4

Yearly Operating Budget for Pizza Side Stand (in thousands of dollars)

OVER BUDGET

$14.0
$12.0
$10.0
$8.0
$6.0

1998 1999 2000 2001 2002 2003 2004 2005
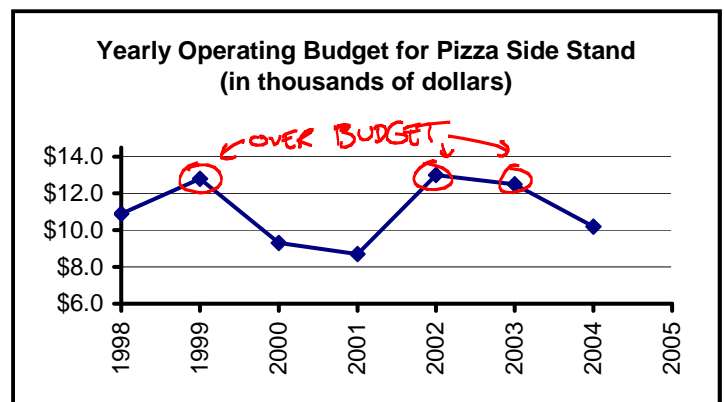
12. Which equation below is the equivalent to the formula $A = \frac{1}{2}bh$?   A.CED.4 $2 \cdot \boxed{A} = \boxed{\frac{1}{2} b \cdot h} \cdot 2$

    A. $b = \frac{2A}{h}$ *

    C. $h = \frac{Ab}{2}$ X

    B. $\frac{1}{2}A = bh$ X

    D. $2Ah = \frac{1}{b}$ X

$\frac{2A}{h} = \frac{bh}{h}$ $\boxed{\frac{2A}{h} = b}$

---

13. Which equation is equivalent to $4n = 2(t - 3)$ when solved for t?   (Borrowed - # 3 p. 39 and DOK 2)

    $4n = 2t - 6$
    $+6 \qquad +6$

    A. $t = \frac{4n-2}{3}$

    C. $t = \frac{4n+6}{2}$ *

    B. $t = \frac{4n-3}{2}$

    D. $t = 4n - 3$

    $\frac{4n+6}{2} = \frac{2t}{2}$

    $2n + 3 = t$

---

14.   Column I   Column II   (NEW and DOK 3)

         The smallest solution of   The greatest solution of
              x − 2 ≥ 7   X ≥ 9   x + 3 ≤ 12   X ≤ 9
              +2 +2   −3 −3
                  (9)   (9)

    A. The value in Column I is greater

    C. The values in Column I and Column II are equal *

    B. The value in Column II is greater

    D. Relationship cannot be determined

---

15. Solve $y = \frac{3}{5}x + 9$ for x.   (NEW and DOK 2) $5 \cdot \boxed{y} = \boxed{\frac{3}{5}x + 9} \cdot 5$

    $5y = 3x + 45$
    $-45 \qquad\qquad -45$

    $\frac{5y - 45}{3} = \frac{3x}{3}$

    A. $x = -\frac{5}{3}y + 15$

    C. $x = -\frac{3}{5}y + 9$

    B. $x = \frac{5}{3}y - 15$ *

    D. $x = -\frac{3}{5}y - 9$

    $\frac{5}{3}y - 15 = x$

---

16. Which equation is equivalent to $\frac{5x}{3} - \frac{2x}{9} = 8$ (Adapted from #2 p. 39 and DOK2)

    $3 \cdot \frac{5x}{3} - \frac{2x}{9} = 8$
    $3 \cdot$

    A. 13x = 72 *

    C. 3x = 16

    B. 11x = 72

    D. 39x = 24

    $\frac{15x}{9} - \frac{2x}{9} = 8$

    $9 \cdot \frac{13x}{9} = 8 \cdot 9$

    $13x = 72$

---

17. Which expression represents all values of x for which the inequality $\frac{2}{3} + \frac{x}{3} > 1$ is true? (Borrowed # 3 p. 44 and DOK 1)

    A. x < 1

    C. x < 5

    $3 \cdot \boxed{\frac{2}{3} + \frac{x}{3}} > \boxed{1} \cdot 3$

    B. x > 1 *

    D. x > 5

    $2 + x > 3$
    $-2 \qquad\quad -2$

    $x > 1$

18. A ferry carries passengers back and forth between two communities on the Peachville River.

- It takes 30 minutes longer for the ferry to make the trip upstream than downstream
- The ferry's average speed in still water is 15 miles per hour
- The river's current is 5 miles per hour $D = rt$ OR $\frac{D}{r} = t$

$$20 \cdot \left[\frac{M}{10}\right] = \left[\frac{M}{20} + 0.5\right] \cdot 20$$

This equation can be used to determine how many miles apart the two cities are.

$$2M = M + 10$$
$$\underline{-M \qquad -M}$$
$$M = 10$$

$\underline{\text{DISTANCE}}$: $\dfrac{m}{15 - 5} = \dfrac{m}{15 + 5} + 0.5$
$\overline{\text{RATE}}$

What is *m*, the distance between communities?   (Borrowed - # 2 p. 44 and DOK 2)

A. 0.5 miles   C. 10 miles   *
B. 5 miles   D. 15 miles

---

19. A manager is comparing the cost of buying ball caps with the company emblem from two different companies.

- Company X charges a $50 fee plus $7 per cap $C = 50 + 7x$
- Company Y charges a $30 fee plus $9 per cap $C = 30 + 9x$

$$50 + 7x = 30 + 9x$$
$$\underline{-30 \;-7x \quad -30 \;-7x}$$
$$\frac{20}{2} = \frac{2x}{2}$$

For what number of ball caps will the manager's cost be the same for both companies? (Borrowed # 1 p. 52 and DOK 3)

$$10 = x$$

A. 10 caps *   C. 40 caps
B. 20 caps   D. 100 caps

---

20. Which pair of inequalities is shown in the graph?

A. $y > -x + 1 \; and \; y > x - 5$ *
B. $y > x + 1 \; and \; y > x - 5$
C. $y > -x + 1 \; and \; y > -x - 5$
D. $y > x + 1 \; and \; y > -x - 5$
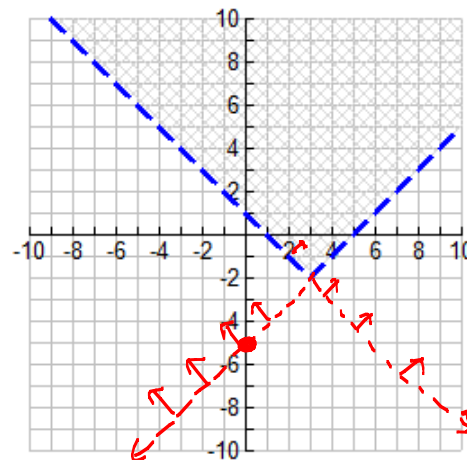
(Borrowed #2 p. 61 and DOK 2)

---

21. Which ordered pair is a solution for the system pictured?

A. (3, 1)   *   (New and DOK 1)
B. (5, 3)
C. (1, 3)
D. (3, 5)

- 5 -
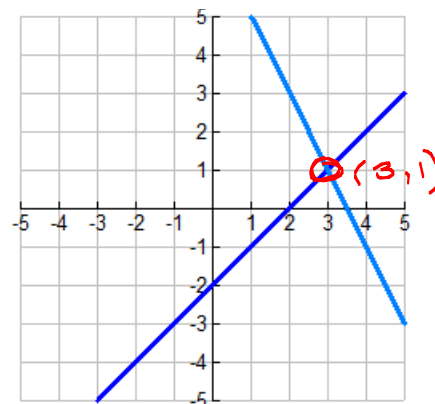
22. Mr. Tony operates a facility that assembles televisions and computers. It takes 5 days to assemble and 2 days to finish a television. It takes 4 days to assemble and 3 days to finish a computer. There is a maximum of 180 days allowed for assembly and 135 for finishing. Which system can be used to represent the situation if x represents the number of televisions and y represents the number of computer? (DOK 1)
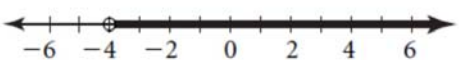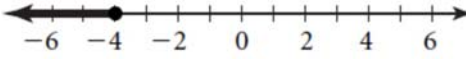
A. $\begin{cases} 5x + 2y \le 180 \\ 4x + 3y \le 135 \end{cases}$

$5x + 4y \le 180$
$2x + 3y \le 135$

C. $\begin{cases} 5x + 4y \le 180 \\ 3x + 2y \le 135 \end{cases}$

B. $\begin{cases} 5x + 4y \le 180 \\ 2x + 3y \le 135 \end{cases}$ *

D. $\begin{cases} 4x + 5y \le 180 \\ 2x + 3y \le 135 \end{cases}$

23. How many solutions would the following system of equations have? $\begin{cases} x = \frac{1}{2}y - 3 \\ y = 2x + 6 \end{cases}$ (DOK 1)

$2x = y - 6$
$y = 2x + 6$

$2x = 2x + 6 - 6$
$2x = 2x$
SAME LINE

A. two

B. one

C. none

D. infinitely many *

24. Which graph shows the correct solution for the inequality -2x + 4 < 12 ? (DOK 2)

$-2x < 8$
$-4 \quad -4$
$\frac{-2x}{-2} < \frac{8}{-2}$
$x > -4$

A.

C.

B. *

D.

25. Which equation corresponds to the graph shown below? (Copied # 1 p. 71 and DOK 1)

A.   y = x + 1

B.   y = 2x + 1

C.   y = x − 2   *

D.   y = 3x − 1

RUN
RISE
$M = \frac{1}{1} = 1$

Y-INT b=-2

$Y = MX + b$

$Y = 1x + -2$
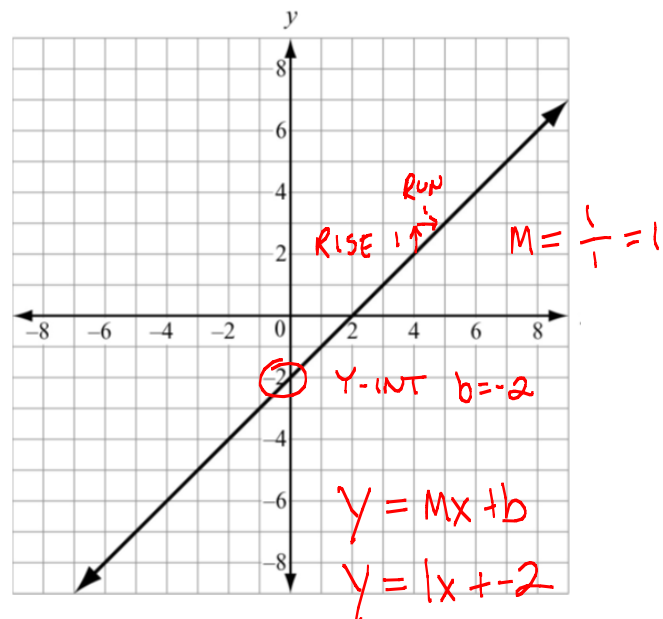
26. Based on the tables, what common point do the equations y = −x + 5 and y = 2x − 1 share?

$y = -x + 5$	
x	y
−1	6
0	5
1	4
2	3
3	2

$y = 2x - 1$	
x	y
−1	−3
0	−1
1	1
2	3
3	5

(Copied # 3 p. 72 and DOK 2)

A. (1, 1)

C. (2, 3) *

B. (3, 5)

D. (3, 2)

27. The first term in this sequence is −1. (Copied # 1 p. 81 and DOK 1)

n	1	2	3	4	5	. . .
a_n	−1	1	3	5	7	. . .

$a_n = -1 + (n-1)2$
$= -1 + 2n - 2$
$= 2n - 3$

Which function represents the sequence?

A.   n + 1

C.   2n − 1

B.   n + 2

D.   2n − 3 *

28. If f(9) = 4(9) − 12, which function gives f(x)? (Modified and DOK 1)

A.   f(x) = 4x

C.   f(x) = 4x − 12 *

B.   f(x) = 9x

D.   f(x) = 12x − 9

29. A farmer owns a horse that can continuously run an average of 8 miles an hour for up to 7 hours. Let y be the distance the horse can travel for a given x amount of time in hours. The horse's progress can be modeled by a function.

Which of the following describes the domain of the function? (Modified and DOK 2)

A. $0 \leq x \leq 7$ *

C. $0 \leq x \leq 56$

DOMAIN: $0 \leq x \leq 7$

B. $0 \leq y \leq 7$

D. $0 \leq y \leq 56$

RANGE: $0 \leq y \leq 56$

30. A population of squirrels doubles every year. Initially there were 5 squirrels. A biologist studying the squirrels created a function to model their population growth, $P(t) = 5(2^t)$ where t is time. The graph of the function is shown. What is the range of the function?
as it relates to the population ?

   A. any real number

   B. any whole number greater than 0

   C. any whole number greater than 5
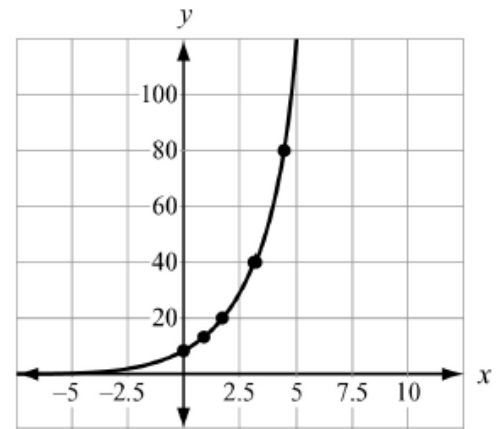
   D. any whole number greater than or equal to 5 *   (Copied # 2 p. 89 and DOK 2)

---

31. The function graphed on this coordinate grid models the maximum height, y, of a dropped ball in feet after its xth bounce.

   On which bounce was the height of the ball approximately 4 feet?

   A. bounce 1

   B. bounce 2 *

   C. bounce 3
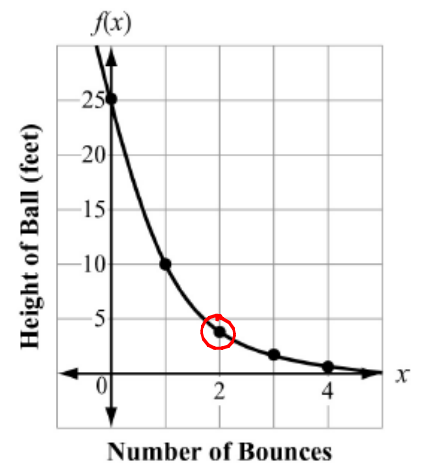
   D. bounce 4   (Copied # 3 p. 90 and DOK 1)

---

32. To rent a canoe, the cost is $3 for the oars and life preserver, plus $5 an hour for the canoe. Which graph models the cost of renting a canoe?   (Copied # 1 p. 98 and DOK 2)

A.

B.

C. *
(4,23)
(2,13)
3 (0,3)

D.

Number of Books Read
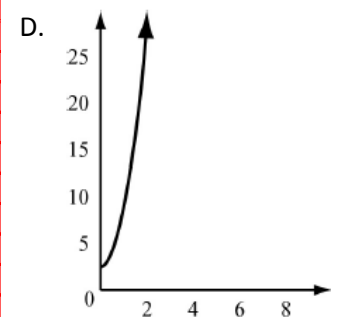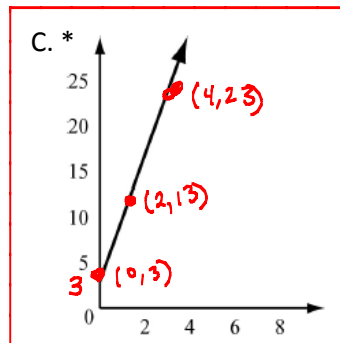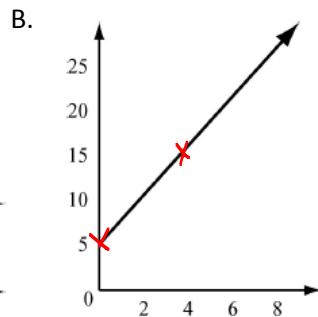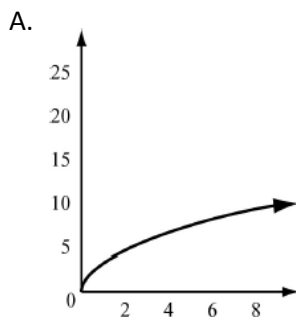
33. Juan and Patti decided to see who could read the most books in a month. They began to keep track after Patti had already read 5 books that month. This graph shows the number of books Patti read for the next 10 days.

   If Juan has read no books before the fourth day of the month and he reads at the same rate as Patti, how many books ~~will~~ *could* he have read by day 8?
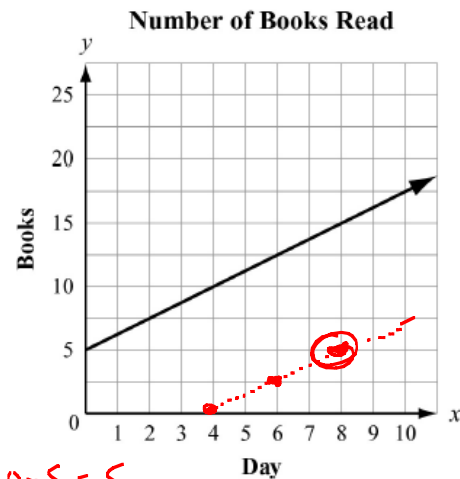
   A. 5 *

   B. 10

   (Modified and DOK 1)

   [handwritten: JUAN: $y = \frac{5}{4}x + b$
   $(0) = 5/4(4) + b$
   $0 = 5 + b$
   $-5 \quad -5$
   $-5 = b$
   $y = \frac{5}{4}x - 5$
   $y = 5/4(8) - 5 = 10 - 5 = 5$]

   C. 15

   D. 20

34. The points (0, 1), (1, 4), (2, 16), (3, 64) are on the graph of a function. Which equation represents that function? (Modified and DOK 1) *[handwritten: Could]*

   A. $f(x) = 2^x$

   B. $f(x) = 3^x$

   C. $f(x) = 4^x$ *

   D. $f(x) = 5^x$

35. Which scatter plot best represents a model of exponential growth? DOK 1

   A. *   B.   C.   D.
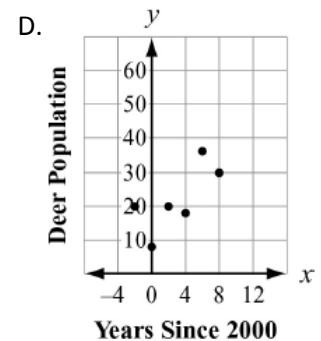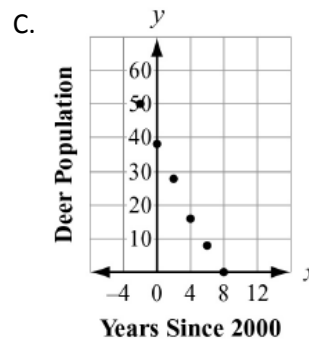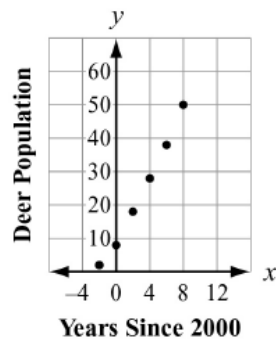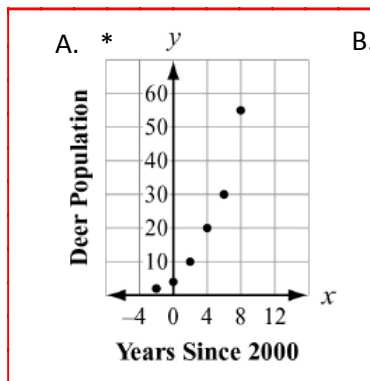
36. Which statement is true about the function f (x)= 7? DOK 1

   A. The function is odd because –f(x) = –f(x).

   B. The function is even because –f(x) = f(–x).

   C. The function is odd because f(x) = f(–x).

   D. The function is even because f(x) = f(–x). *

37. For the data below, construct a frequency histogram using nine classes. Describe the shape of the histogram. The data set: The California Pick Three Lottery. DOK 1
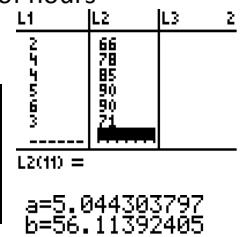
    1 3 8 8 7 7 6 5 8 6
    7 7 6 9 7 7 8 7 6 6
    9 5 5 3 8 8 4 9 2 4

    A. Symmetric
    B. Uniform
    C. Skewed left *
    D. Skewed right
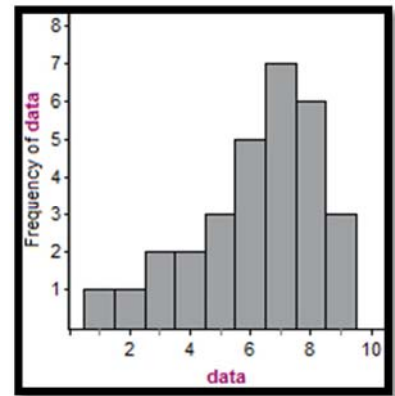
38. The data below are final exam scores of 10 randomly selected students and the number of hours they studied for the exam. DOK 1

Hours, x	3	5	2	8	2	4	4	5	6	3
Scores, y	65	80	60	88	66	78	85	90	90	71

Determine the linear regression equation that best fits the data.

A.   y = 5.09x + 55.23

B.   y = 5.03x + 56.19

C.   y = 5.04x + 56. 11 *

D.   y = 3.65x + 63.96

39. Which of the following residual plots illustrates a regression line that would be the best prediction line?

A.

B.

C. *

D.
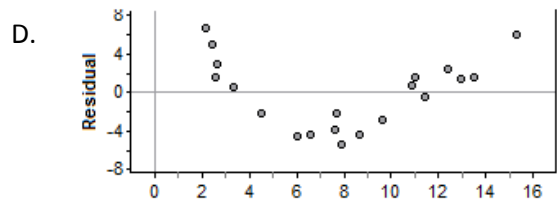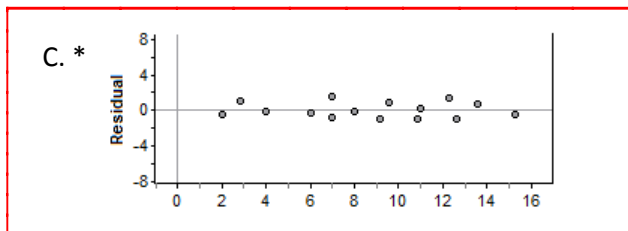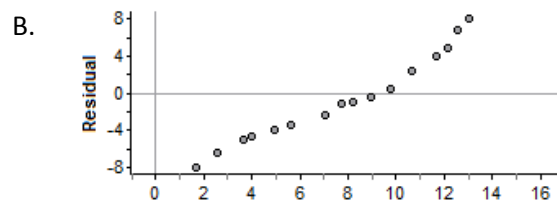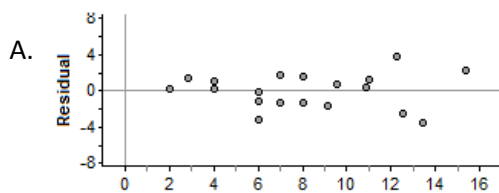
DOK 1

40. Using the two-way frequency table below to determine which statement below is TRUE. DOK 2

Foreign Language Enrollment Numbers at Phoenix High School

	Spanish	French	German	Total
Males	42	17	29	88
Females	46	31	12	89
Total	88	48	41	177

A. There are more students enrolled in Spanish than French and German combined.
B. There are more females taking Spanish than total number of students taking German. *
C. There are more males taking foreign language than females.
D. Spanish is the only course in which there are more females than males taking the course.

41. Using the frequency table below. Out of all women in the sample, determine the percent of women that live off campus. DOK 1

3758/7582
.4956475864

A. 25.4%
B. 49.6% *
C. 98.3%
D. 52.5%

|	Live on Campus	Live off Campus	Total
Men	3216	4010	7226
Women	3824	3758	7582
Total	7040	7768	14,808

42. Bob played a game 40 times and the number of points he scored in each game is listed below.

5, 8, 8, 8, 8, 8, 8, 9, 9, 9   9, 9, 10, 10, 10, 10, 10, 10, 10, 11
11, 11, 11, 11, 11, 12, 12, 12, 12, 12   13, 13, 13, 13, 13, 14, 14, 14, 15, 15

Which representation of the data values below is correct? DOK 1

A. *

Bob's Points

B.

Bob's Points

C.

Bob's Points
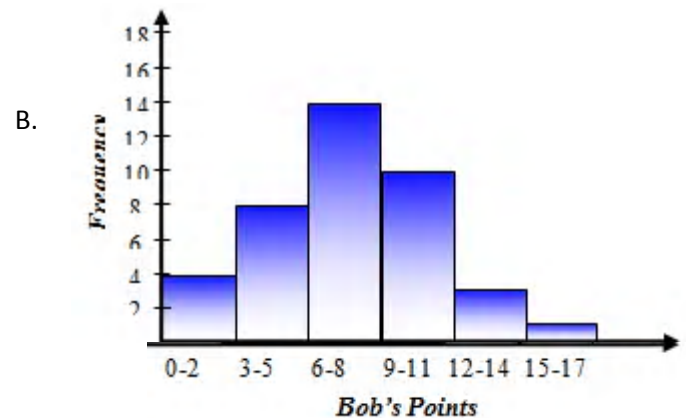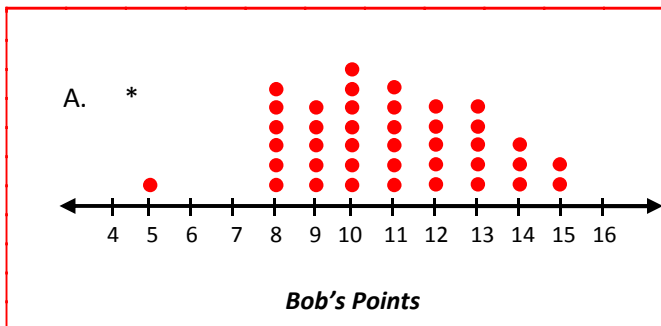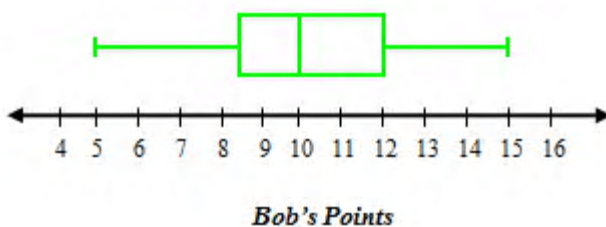
D. **All of the graphs are correct**

43. The graph at the right shows a scatter plot and the associated linear regression of a sample of 10 students' measurements (their height vs. their shoe size). Using the linear regression model, predict the height of a person that wears a size 11 shoe. DOK 2
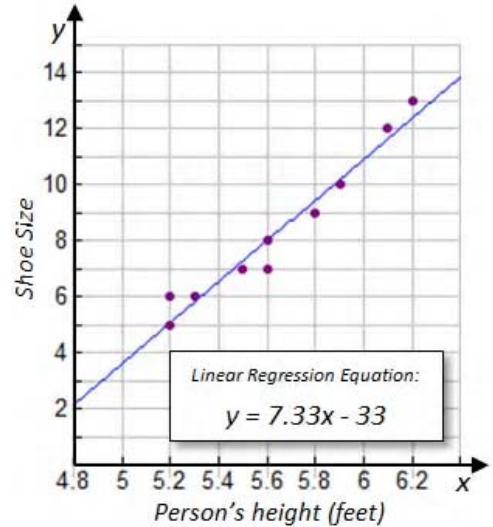
A. 6.00 feet *

B. 6.72 feet

C. 10.98 feet

D. 47.63 feet

(handwritten work):
$$11 = 7.33x - 33$$
$$+33 \qquad +33$$
$$44 = 7.33x$$
$$\frac{44}{7.33} = \frac{7.33x}{7.33}$$
44/7.33
6.002728513

(graph): Shoe Size vs Person's height (feet)
Linear Regression Equation:
$y = 7.33x - 33$

---

44. What would be the most likely correlation coefficient (r) for the following scatter plot? DOK 1

A. r ≈ 0.922

B. r ≈ 0.356

C. r ≈ − 0.351

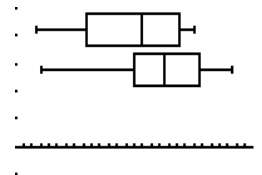D. r ≈ − 0.913   *

(handwritten): STRONG NEGATIVE CORRELATION

---
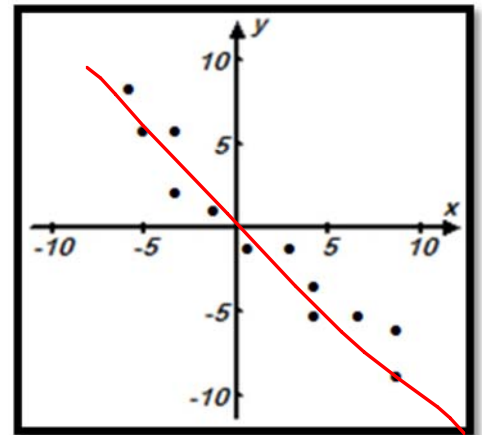
45. The test scores for 2 students are shown in the table. Make a box plot for the two data sets. Which student had the higher tests scores? DOK 2
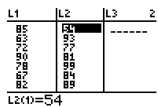
| Student 1 | 85 | 63 | 72 | 90 | 78 | 67 | 82 | 53 | 88 |
| Student 2 | 54 | 93 | 77 | 81 | 99 | 84 | 89 | 75 | 83 |

A. Student 1   C. The students are the same

B. Student 2 *   D. Cannot be determined

---

46. This table shows admission price for various movie theaters in the metro-Atlanta area. DOK 1

Movie Theater Prices				
$9.00	$12.00	$9.75	$8.25	$11.25

Which is the mean absolute deviation?

A. $1.26 *   C. $10.05

B. $6.30   D. $10.13

(handwritten):
$$= \frac{(1.05 + 1.95 + 0.3 + 1.8 + 1.2)}{5}$$
$$= \frac{6.3}{5} = 1.26$$

- 12 -

47. A reading teacher recorded the number of pages read in an hour by each of her students. The numbers are shown below. DOK 1

44, 49, 39, 43, 50, 44, 45, 49, 51
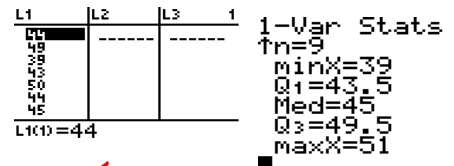
For this data, which summary statistic is **NOT** correct?

```
L1      L2     L3      1    1-Var Stats
44                          ↑n=9
49                          minX=39
39                          Q1=43.5
43                          Med=45
50                          Q3=49.5
44                          maxX=51
45
L1(1)=44                    ■
```

A. The minimum is 39. ✔   C. The median is 45. ✔

B. The lower quartile is 44.   * ✗   D. The maximum is 51. ✔

---

48. A teacher determined the median scores and interquartile ranges of scores for a test she gave to two different classes. DOK 3

CLASS 1   55-70   70   70-85
*   Q₁   MED   Q₃*

- In Class 1, the median score was 70 points, and the interquartile range was 15 points.
- In Class 2, the median score was 75 points, and the interquartile range was 12 points.

CLASS 2   63-75   75   75-87
*   Q₁   MED   Q₃*

Based on the measures above, which is the only possible range of numbers that could be included in the third quartile of both classes simultaneously?

THE LOWEST Q₃ CAN BE FOR CLASS 2 IS 75.
THE HIGHEST Q₃ CAN BE FOR CLASS 1 IS 85.
(LIMITING PARAMETERS)

A. 70 to 87 points   C. 75 to 87 points

B. 70 to 85 points   D. 75 to 85 points *

---

49. A regular pentagon is centered about the origin and has a vertex at (0, 4). (DOK 1)

Which transformation maps the pentagon to itself?
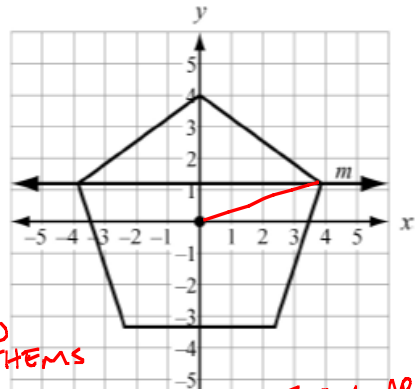
A. A reflection across line m ✗
B. A reflection across the x-axis ✗
C. A clockwise rotation of 100° about the origin ✗
D. A clockwise rotation of 144° about the origin * ✔

72° BETWEEN RADII OR APOTHEMS
*(i.e. 72° ROTATIONAL SYMMETRY ABOUT ORIGIN)*
ANY MULTIPLE OF 72° WORKS

---

50. Which sequence of transformations maps ΔABC to ΔRST? (DOK 2)

REFLECT

A. Reflect ΔABC across the line $x = -1$.
   Then translate the result 1 unit down

B. Reflect ΔABC across the line $x = -1$.
   Then translate the result 5 units down *

TRANSLATE

C. Translate ΔABC 6 units to the right.
   Then rotate the result 90° clockwise about the point (1, 1).

D. Translate ΔABC 6 units to the right.
   Then rotate the result 90° counterclockwise about the point (1, 1).
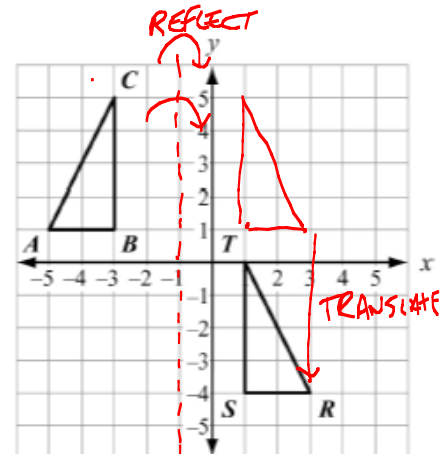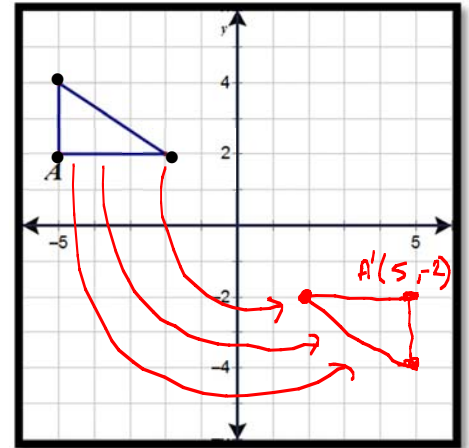
51. Which three points are collinear? DOK 1

    A.   Points C, D, and B
    B.   Points B, C, and A *
    C.   Points A, D, and E
    D.   Points K, F, and E

---
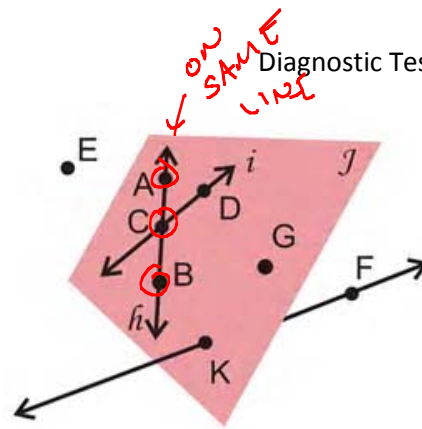
52. Map the point A after rotating the triangle 180° about the origin.
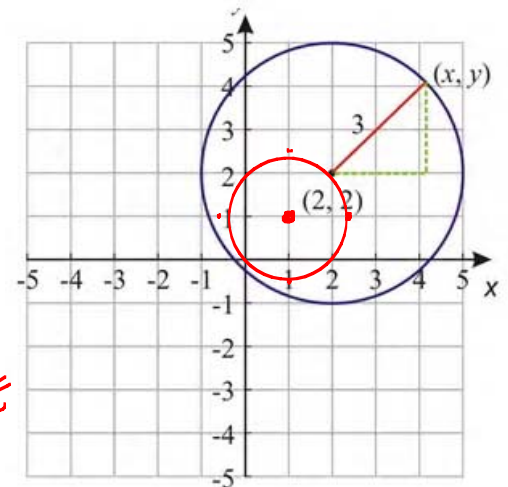   DOK 1

    A.   A (-5, 2) → A' (5, 2)
    B.   A (-5, 2) → A' (5, -2) *
    C.   A (-5, 2) → A' (-5, 2)
    D.   A (-5, 2) → A' (-5, -2)

---

53. Using the graph of the circle below, if the circle is dilated by a factor
of ½ about the origin, what would be the center and the radius of
the image? DOK 2

    A.   Center: (2, 2), radius: 1.5
    B.   Center: (2, 2), radius: 3
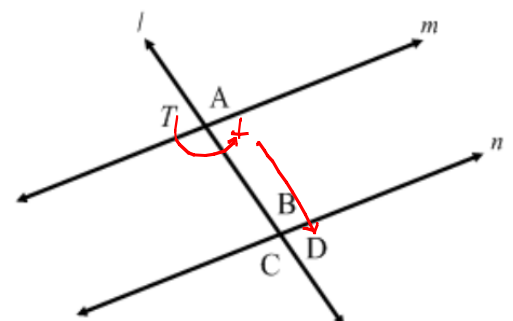   C.   Center: (1, 1), radius: 1.5 *
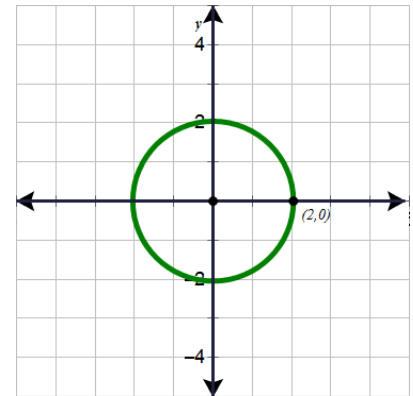   D.   Center: (1, 1), radius: 3

---

54. Line *l* is a transversal through parallel lines *m* and *n*.   After
rotating angle *T* 180° about its vertex and translating it along
line *l*, what angle could be the image of *T* ?
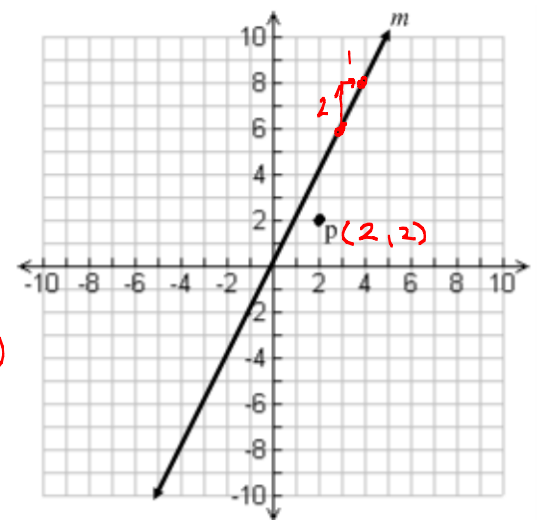   DOK 2

    A. A
    B. B
    C. C
    D. D *

55. If the circle is centered at the origin and the point (2, 0) is on the circle, what other point must be on the circle?
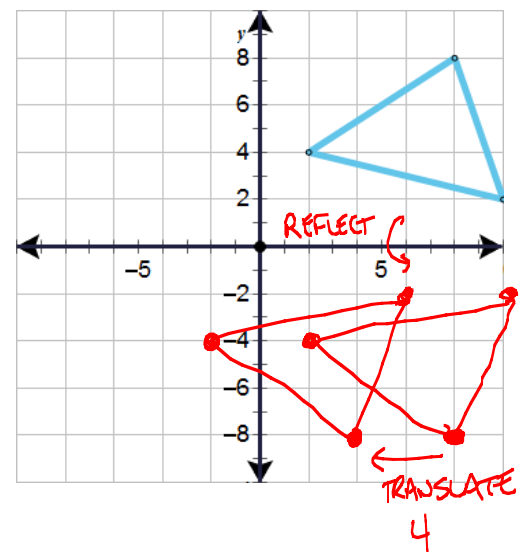
$x^2 + y^2 = 4$ DOK 1

A. $(1, \sqrt{3})$ $1^2 + \sqrt{3}^2 = 4$ ✓

B. $(-\sqrt{2}, -\sqrt{2})$ $(-\sqrt{2})^2 + (-\sqrt{2})^2 = 4$ ✓

C. $(0, -\sqrt{4})$ $(0)^2 + (-\sqrt{4})^2 = 4$ ✓

D. All of the Above *

56. Find the equation of the line perpendicular to line *m* through point p. DOK 1

M's slope $= \frac{2}{1}$

$\perp M = -\frac{1}{2}$

A. $y = 2x - 2$

B. $y = -\frac{1}{2}x + 3$ *

C. $y = \frac{1}{2}x + 1$

D. $y = -2x + 6$

$y = mx + b$

$y = -\frac{1}{2}x + b$ $P(2,2)$

$2 = -\frac{1}{2}(2) + b$

$2 = -1 + b$
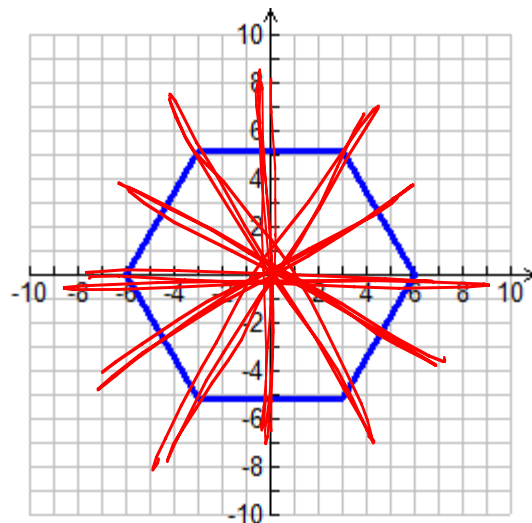
$\underline{+1 \qquad +1}$

$3 = b$

$y = -\frac{1}{2}x + 3$

57. When the triangle is reflected over the x-axis and translated left 4 units, what are the new points to the triangle? DOK 2

A. Points (−2, 0), (−10, −2), (−8, 4)

B. Points (−2, −4), (6, −2), (4, −8) *

C. Points (−2, 4), (−8, −8), (−10, −2)

D. None of the Above.

REFLECT

TRANSLATE 4

58. How many lines of symmetry does the regular hexagon shown at the right have? DOK 1

    A. 0
    B. 3
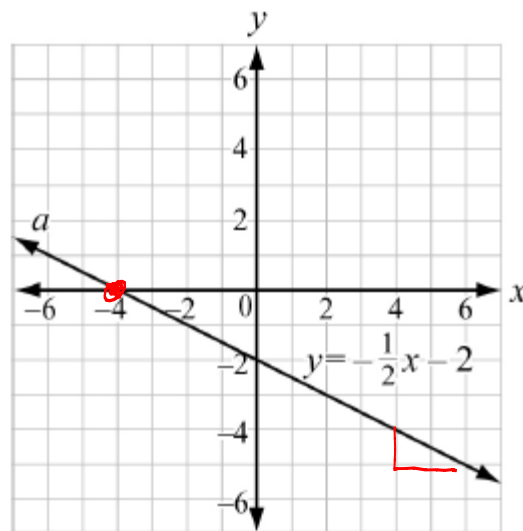   C. 6 *
    D. 12

59. An equation of a line a is $y = -\frac{1}{2}x - 2$ and is shown at the right.

    Which is an equation of a line that is perpendicular to line a
    and passes through the point (–4, 0)? DOK 1

    SLOPE of a ; M = $-\frac{1}{2}$

    A. $y = -\frac{1}{2}x + 2$

    ⊥ M = 2

    B. $y = -\frac{1}{2}x + 8$

    C. $y = 2x - 2$

    $y = 2x + b$

    D. $y = 2x + 8$ *

    $0 = 2(-4) + b$
    $0 = -8 + b$
    $+8 \quad +8$
    _____
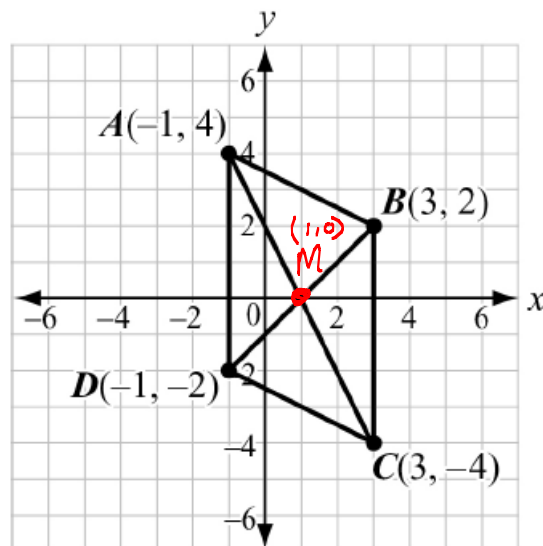 $8 = b$

60. Parallelogram ABCD has vertices as shown.

    Which equation could be used in proving the diagonals of
    parallelogram ABCD bisect each other? DOK 2

        MB   MC

    A. $\sqrt{(3-1)^2 + (2-0)^2} = \sqrt{(1-3)^2 + (0+4)^2}$ ✗
        INCORRECT FORMULAS

    B. $\sqrt{(3+1)^2 + (2+0)^2} = \sqrt{(1+3)^2 + (0-4)^2}$
          AM   MC

    C. $\sqrt{(-1-1)^2 + (4-0)^2} = \sqrt{(1-3)^2 + (0+4)^2}$ *
        INCORRECT FORMULAS

    D. $\sqrt{(-1+1)^2 + (4+0)^2} = \sqrt{(1+3)^2 + (0-4)^2}$
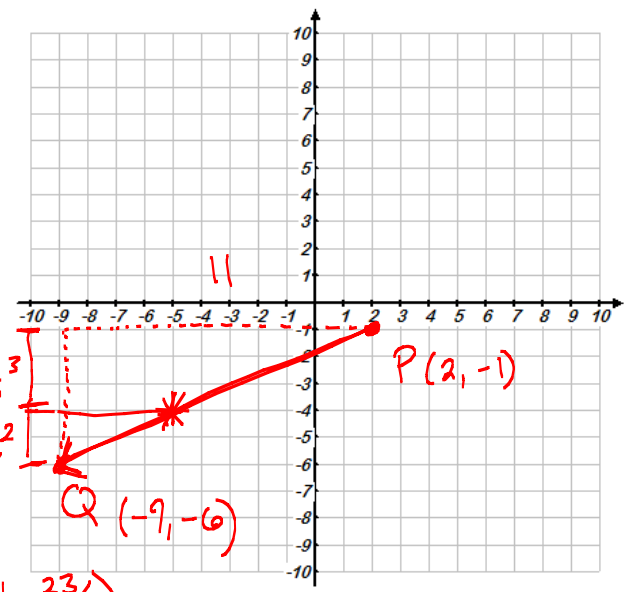

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61. Given the points P(2, − 1) and Q (−9, −6), which are coordinates of a point on the directed line segment $\overline{PQ}$ that partitions $\overline{PQ}$ in the ratio $\frac{3}{2}$? DOK 3

A. $\left(-\frac{23}{5}, -4\right)$ *

B. $\left(-\frac{12}{5}, -3\right)$

C. $\left(-\frac{5}{3}, -\frac{8}{3}\right)$

D. $\left(-\frac{5}{2}, -\frac{67}{22}\right)$

X-VALUE (ABSCISSA)

$2 + \frac{3}{5}(-9-2)$

$2 + \frac{3}{5}(-11)$ 11

$2 + \frac{-33}{5} = -\frac{23}{5}$

Y-VALUE (ORDINATE)

$-1 + \frac{3}{5}(-6--1)$

$-1 + \frac{3}{5}(-5)$

$-1 + -3 = -4$ $(-4, -23/5)$

$P(2, -1)$ $Q(-9, -6)$

---

62. Triangle ABC has vertices as shown. What is the area of the triangle? DOK 2

$\overline{AC} \perp \overline{AB}$
BASED ON SLOPES

A. $\sqrt{72}$ square units

B. 12 square units *

C. $\sqrt{288}$ square units

D. 24 square units

$AB = \sqrt{3^2 + 3^2} = \sqrt{18} = 3\sqrt{2}$
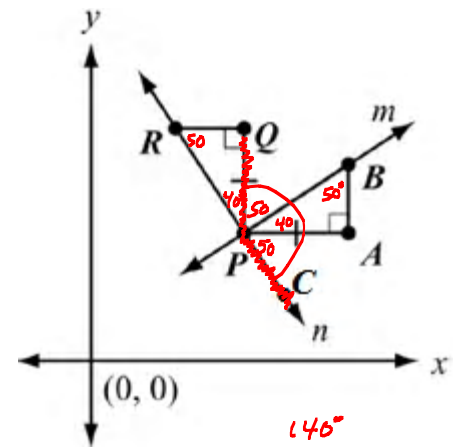
$AC = \sqrt{4^2 + 4^2} = \sqrt{32} = 4\sqrt{2}$

$AREA = \frac{b \cdot h}{2} = \frac{(3\sqrt{2})(4\sqrt{2})}{2} = \frac{24}{2} = 12$

$A(1, 4)$ $B(4, 1)$ $C(-3, 0)$

---
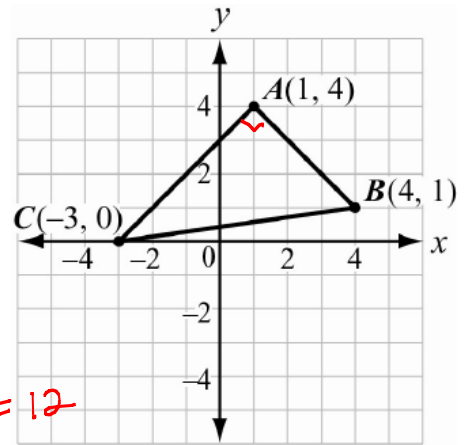
63. Consider that ΔPQR is the image of ΔPAB after a rotation of 90° about point P. Given $m\angle ABP = 50°$, find the $m\angle QPC$. DOK 2

A. 40°
B. 90°
C. 130°
D. 140° *

R Q m B P A C n $(0, 0)$ $∠40°$

64. The equation of line m is "$y = a \cdot x + b$" and the equation of line l is "$y = c \cdot x + d$". If the two lines are perpendicular what is the product $a \cdot c$? DOK 1
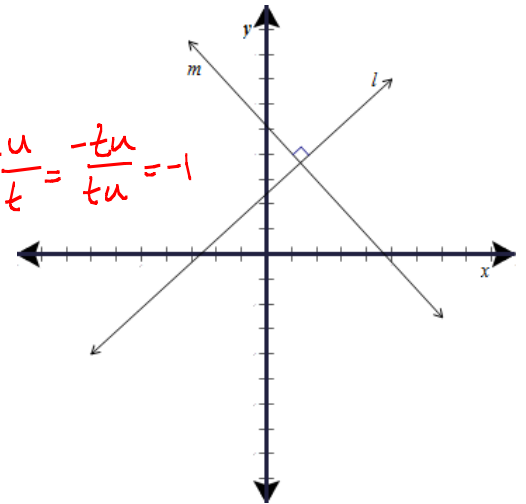
A. 1

B. -1 *

C. 0

D. Not enough information is provided

$$a = \frac{t}{u}$$

$$\frac{t}{u} \cdot \frac{-u}{t} = \frac{-tu}{tu} = -1$$

$$c = -\frac{u}{t}$$

---

65. Find the perimeter of rectangle ABCD. DOK 2

A. $\sqrt{50}$

B. $\sqrt{10} + \sqrt{40}$

C. $3\sqrt{10}$

D. $6\sqrt{10}$ *

$$AD = \sqrt{1^2 + 3^2}$$
$$= \sqrt{10}$$

$$AB = \sqrt{6^2 + 2^2}$$
$$= \sqrt{40}$$
$$= 2\sqrt{10}$$

$$P = 2l + 2w$$
$$= 2(\sqrt{10}) + 2(2\sqrt{10})$$
$$= 2\sqrt{10} + 4\sqrt{10}$$
$$= 6\sqrt{10}$$