

1a Which situation is an example of bivariate data?

2 sets of numbers

1) the number of pizzas Tanya eats during her years in high school univariate

2) the number of times Ezra puts air in his bicycle tires during the summer univariate

③ the number of home runs Elias hits per game and the number of hours he practices baseball

4) the number of hours Nellie studies for her mathematics tests during the first half of the univariate school year

1b Which statement is true about the data set 4, 5, 6, 6,

7, 8, 12?

1) mean = mode

② mode = median

3) mean < median

4) mode > mean

work

$$\begin{aligned} \text{mean} &= \frac{49}{7} = 7 \\ \text{median} &= 6 \\ \text{mode} &= 6 \end{aligned}$$

1a An example of an equation is

(1) $2x^2 - 4x + 12$

(3) $4(x + 6)(x - 2)$

(2) $|x - 6|$

(4) $2x = x^2 + 3$

1b The expression $\frac{2n}{5} + \frac{3n}{2}$ is equivalent to

(1) $\frac{5n}{7}$

(3) $\frac{19n}{10}$

(2) $\frac{6n^2}{10}$

(4) $\frac{7n}{10}$

7a When $x = 4$, the value of $2x^0 + x!$ is

(1) 24

(3) 26

(2) 25

(4) 28

7b The dimensions of a rectangle are measured to be 12.2 inches by 11.8 inches. The actual dimensions are 12.3 inches by 11.9 inches. What is the relative error, to the *nearest ten-thousandth*, in calculating the area of the rectangle?

2a Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?

- 1) 9.0 ft² **work**
- 2) 13.5 ft²
- 3) 22.5 ft² Surface Area
- 4) 27.0 ft²

$$V = lwh$$

$$V = (3)(1.5)(2) = 9$$

rectangular prism SA = 2lw + 2hw + 2lh

cylinder SA = 2πr² + 2πrh

x · x 44

2b The expression x² - 16 is equivalent to

- 1) (x + 2)(x - 8)
- 2) (x - 2)(x + 8)
- 3) (x + 4)(x - 4)
- 4) (x + 8)(x - 8)

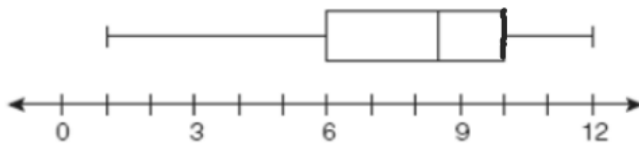
(x + 4)(x - 4)

x ²	-8x
+2x	-16

x² - 8x + 2x - 16
x² - 6x - 16

Q3

3a What is the value of the third quartile shown on the box-and-whisker plot below?



- 1) 6
- 2) 8.5
- 3) 10
- 4) 12

y = mx + b

3b What is the slope of the line whose equation is

2y = 5x + 4? **work**

- 1) 5
- 2) 2
- 3) 5/2
- 4) 2/5

$$\frac{2y}{2} = \frac{5x + 4}{2}$$

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

4a Kirsten invested \$1000 in an account at an annual interest rate of 3%. She made no deposits or withdrawals on the account for 5 years. The interest was compounded annually. Find the balance in the account, to the *nearest cent*, at the end of 5 years.

$$1000(1+0.03)^5$$

work

4b Which relation is not a function?

- 1) $\{(1, 5), (2, 6), (3, 6), (4, 7)\}$ Y
- 2) $\{(4, 7), (2, 1), (-3, 6), (3, 4)\}$ Y
- ③ $\{(-1, 6), (1, 3), (2, 5), (1, 7)\}$ N
- 4) $\{(-1, 2), (0, 5), (5, 0), (2, -1)\}$ Y

5a Which expression is equivalent to

$$\frac{2x^6 - 18x^4 + 2x^2}{2x^2} ?$$

work

- 1) $x^3 - 9x^2$
- ② $x^4 - 9x^2$
- 3) $x^3 - 9x^2 + 1$
- ④ $x^4 - 9x^2 + 1$

$$\frac{2xxxxxx - 18xxxx + 2xx}{2xx \quad 2xx \quad 2xx} = x^4 - 9x^2 + 1$$

5b Given: $A = \{3, 6, 9, 12, 15\}$

$B = \{2, 4, 6, 8, 10, 12\}$

What is the union of sets A and B ?

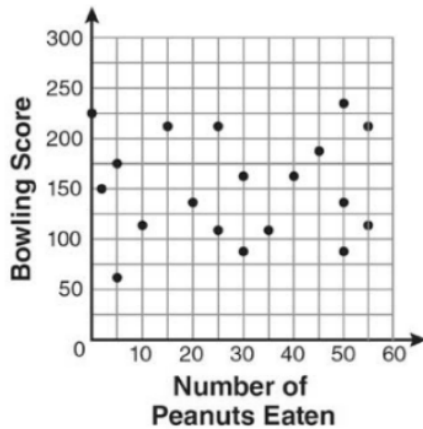
- 1) $\{6\}$
- 2) $\{6, 12\}$
- 3) $\{2, 3, 4, 8, 9, 10, 15\}$
- ④ $\{2, 3, 4, 6, 8, 9, 10, 12, 15\}$

$$A \cap B = \{6, 12\}$$

$\cup \rightarrow$ Union

$\cap \rightarrow$ intersection

- 6a The scatter plot below represents the relationship between the number of peanuts a student eats and the student's bowling score.



- Which conclusion about the scatter plot is valid?
- 1) There is almost no relationship between eating peanuts and bowling score.
 - 2) Students who eat more peanuts have higher bowling scores.
 - 3) Students who eat more peanuts have lower bowling scores.
 - 4) No bowlers eat peanuts.

6b What is the product of $-3x^2y$ and $(5xy^2 + xy)$?

- 1) $-15x^3y^3 - 3x^3y^2$
- 2) $-15x^3y^3 - 3x^3y$
- 3) $-15x^2y^2 - 3x^2y$
- 4) $-15x^3y^3 + xy$

work

$$-3x^2y$$

side top

$$5xy^2 + 1xy$$

$-15x^3y^3$	$-3x^3y^2$
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- 7a On the set of axes below, solve the following system of equations graphically and state the coordinates of all points in the solution set. work

$$y = x^2 + 4x - 5$$

$$y = x - 1$$