

NAME: \_\_\_\_\_

*A.N.5: Solve algebraic problems arising from situations that involve fractions, decimals, percents (decrease/increase and discount), and proportionality/direct variation.*

1. 069913a, P.I. A.N.5

A total of \$450 is divided into equal shares. If Kate receives four shares, Kevin receives three shares, and Anna receives the remaining two shares, how much money did Kevin receive?

[A] \$250                      [B] \$200  
[C] \$100                      [D] \$150

2. 069915a, P.I. A.N.5

During a recent winter, the ratio of deer to foxes was 7 to 3 in one county of New York State. If there were 210 foxes in the county, what was the number of deer in the county?

[A] 147    [B] 90    [C] 490    [D] 280

3. 010014a, P.I. A.N.5

Sterling silver is made of an alloy of silver and copper in the ratio of 37:3. If the mass of a sterling silver ingot is 600 grams, how much silver does it contain?

[A] 555 g                      [B] 450 g  
[C] 48.65 g                      [D] 200 g

4. 010210a, P.I. A.N.5

There are 357 seniors in Harris High School. The ratio of boys to girls is 7:10. How many boys are in the senior class?

[A] 117    [B] 107    [C] 147    [D] 210

5. 089931a, P.I. A.N.5

The profits in a business are to be shared by the three partners in the ratio of 3 to 2 to 5. The profit for the year was \$176,500. Determine the number of dollars each partner is to receive.

6. 010331a, P.I. A.N.5

At the Phoenix Surfboard Company, \$306,000 in profits was made last year. This profit was shared by the four partners in the ratio 3:3:5:7. How much *more* money did the partner with the largest share make than one of the partners with the smallest share?

7. 060801a, P.I. A.N.5

Segment  $\overline{RS}$  is parallel to segment  $\overline{TU}$ . If the slope of  $\overline{RS} = \frac{5}{8}$  and the slope of  $\overline{TU} = \frac{x}{24}$ , the value of  $x$  is

[A] 5    [B] 15    [C] 20    [D] 10

8. 080603a, P.I. A.N.5

Jordan and Missy are standing together in the schoolyard. Jordan, who is 6 feet tall, casts a shadow that is 54 inches long. At the same time, Missy casts a shadow that is 45 inches long. How tall is Missy?

[A] 5 ft 6 in                      [B] 86.4 in  
[C] 5 ft                              [D] 38 in

9. 060124a, P.I. A.N.5

If a girl 1.2 meters tall casts a shadow 2 meters long, how many meters tall is a tree that casts a shadow 75 meters long at the same time?

10. 010222a, P.I. A.N.5

A 12-foot tree casts a 16-foot shadow. How many feet tall is a nearby tree that casts a 20-foot shadow at the same time?

11. 080223a, P.I. A.N.5

An image of a building in a photograph is 6 centimeters wide and 11 centimeters tall. If the image is similar to the actual building and the actual building is 174 meters wide, how tall is the actual building, in meters?

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[1] D

[2] C

[3] A

[4] C

[4] \$52,950, \$35,300, and \$88,250 and an appropriate method is shown, such as  $3x + 2x + 5x = \$176,500$ .

[3] A correct equation is set up or multiplied by correct fractional values  $\frac{3}{10}$ ,  $\frac{2}{10}$ , and  $\frac{5}{10}$ ,

but a computational mistake is made, and three appropriate values are found.

or [3] An appropriate method is shown, but not all three values are found.

[2] The equation is set up correctly, but numerous computational mistakes are made, and three appropriate values are found.

or [2] An incorrect equation is shown, but three appropriate values are found.

or [2] An appropriate equation is shown but is solved only for  $x$  (17,650).

[1] The equation is set up correctly, but no appropriate values are found.

or [1] Three correct answers are found, and no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

[4] \$68,000, and appropriate work is shown.

[3] \$119,000 and \$51,000, and appropriate work is shown, but the answers are not subtracted to find the difference.

or [3] Appropriate work is shown, but one computational error is made.

[2] Appropriate work is shown, but more than one computational error is made.

[1] The value for one share (\$17,000) is found, but no further correct work is shown.

or [1] \$68,000, but no work is shown.

[0] \$17,000 or \$119,000 or \$51,000, and no work is shown.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[6] obviously incorrect procedure.

[7] B

[8] C

[2] 45, and appropriate work is shown, such as a diagram or  $\frac{1.2}{2} = \frac{x}{75}$ .

[1] Appropriate work is shown, but no answer or an incorrect answer is found.

or [1] 45, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[9] incorrect procedure.

[2] 15, and any equivalent proportion, equation, or fraction conversion is shown, such as  $\frac{12}{16} = \frac{x}{20}$ .

[1] An appropriate proportion, equation, or fraction conversion is shown, but one computational or conceptual error is made.  
or [1] An incorrect proportion, equation, or fraction conversion is shown, but an appropriate answer is found for the incorrect proportion.

or [1] 15, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[10] incorrect procedure.

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[2] 319, and appropriate work is shown.

[1] A correct proportion is shown, but no solution or an incorrect solution is found.

or [1] An incorrect proportion of equal difficulty is solved appropriately.

or [1] Appropriate work is shown, but one computational error is made.

or [1] 319, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[11] incorrect procedure.

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