

A.CED.A.1: Modeling Rationals

1 Mallory wants to buy a new window air conditioning unit. The cost for the unit is \$329.99. If she plans to run the unit three months out of the year for an annual operating cost of \$108.78, which function models the cost per year over the lifetime of the unit, $C(n)$, in terms of the number of years, n , that she owns the air conditioner.

- 1) $C(n) = 329.99 + 108.78n$
- 2) $C(n) = 329.99 + 326.34n$
- 3) $C(n) = \frac{329.99 + 108.78n}{n}$
- 4) $C(n) = \frac{329.99 + 326.34n}{n}$

2 Julie averaged 85 on the first three tests of the semester in her mathematics class. If she scores 93 on each of the remaining tests, her average will be 90. Which equation could be used to determine how many tests, T , are left in the semester?

- 1) $\frac{255 + 93T}{3T} = 90$
- 2) $\frac{255 + 90T}{3T} = 93$
- 3) $\frac{255 + 93T}{T + 3} = 90$
- 4) $\frac{255 + 90T}{T + 3} = 93$

3 The number of minutes students took to complete a quiz is summarized in the table below.

Minutes	14	15	16	17	18	19	20
Number of Students	5	3	x	5	2	10	1

If the mean number of minutes was 17, which equation could be used to calculate the value of x ?

- 1) $17 = \frac{119 + x}{x}$
- 2) $17 = \frac{119 + 16x}{x}$
- 3) $17 = \frac{446 + x}{26 + x}$
- 4) $17 = \frac{446 + 16x}{26 + x}$

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Answer Section

1 ANS: 3 REF: 061722aaii

2 ANS: 3 REF: 061602aaii

3 ANS: 4 REF: 061124a2

4 ANS: 4

$$\frac{4 \cdot 0 + 6 \cdot 1 + 10 \cdot 2 + 0 \cdot 3 + 4k + 2 \cdot 5}{4 + 6 + 10 + 0 + k + 2} = 2$$

$$\frac{4k + 36}{k + 22} = 2$$

$$4k + 36 = 2k + 44$$

$$2k = 8$$

$$k = 4$$

REF: 061221a2

5 ANS: 3

$$\frac{5}{x} = 3 + \frac{7}{2x}$$

$$\frac{10}{2x} = 3 + \frac{7}{2x}$$

$$\frac{3}{2x} = 3$$

$$6x = 3$$

$$x = \frac{3}{6} = \frac{1}{2}$$

REF: 010927a

6 ANS: 2 REF: 018428siii

7 ANS:

$$\frac{3}{4}$$

REF: 060506al

8 ANS:

$$7$$

REF: 030503al

9 ANS:

$$20$$

REF: 019015al

10 ANS:
9

REF: 039016al