

Additional sample problems for Grades 5, 7 and 8

Grade 5

11. Jim works 4 hours a day during the weekdays, 2 hours on Saturday, and does not work on Sunday. Suppose that he earns \$20/hour during the weekdays and \$25/hour on Saturday. If Jim has worked one week, how much does he earn?

A) \$450 B) \$400 C) \$130 D) \$50 E) \$500

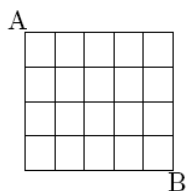
16. The following table shows Susie's mathematics test scores obtained during the last semester. Which of the following statements is not correct?

| Test | Scores |
|------|--------|
| # 1 | 84 |
| # 2 | 85 |
| # 3 | 93 |
| # 4 | 89 |
| # 5 | 94 |

- A) More than half test scores are above or equal to the average score.
B) One of the actual score has the same value as the average score.
C) Susie obtained scores below the average value for 40% of total tests.
D) If Susie obtains the same score as the average score for Test # 6, the average will increase.
E) If the average is calculated using only the best 4 scores, the average will increase.

Grade 7

16. In the diagram, there are 49 line segment of length 1 arranged as shown to form 20 squares. There are various routes from A to B traveling along the segments so that no segment is traveled more than once. Find the number of routes.



- A) 63 B) 126 C) 252 D) 378 E) 504
17. In the table below, find the number in the 15-th row and the 8-th column.

| | | | | | |
|----|-----|-----|-----|-----|-----|
| 1 | 2 | 4 | 7 | 11 | ... |
| 3 | 5 | 8 | 12 | ... | |
| 6 | 9 | 13 | ... | | |
| 10 | 14 | ... | | | |
| 15 | ... | | | | |
| ⋮ | | | | | |

- A) 177 B) 218 C) 239 D) 246 E) 300
18. A, B, C, and D made the following statements. Only one said truth. Who is the thief?
- A: B is the thief.
 - B: A is telling a lie.
 - C: I saw A stealing.
 - D: I am not the thief

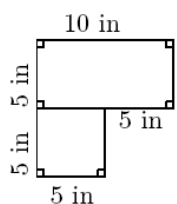
- A) A B) B C) C D) D E) None

Grade 8

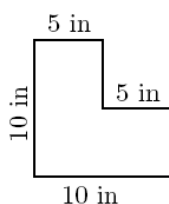
11. If $f(x) = 2x - x^2$ and $g(x) = \sqrt{13 - 5x}$, find $f(1 - g(2))$.

- A) -2 B) $-\sqrt{3}$ C) $1 - \sqrt{3}$ D) $\sqrt{3}$ E) $2 + \sqrt{3}$

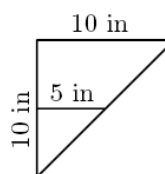
12. Using the following pictures, find the volume of the 3-dimensional figure.



upper view



left side view



front view

- A) 208.3 in^3 B) 312.5 in^3 C) 350 in^3 D) 416.7 in^3 E) 625 in^3

13. You have been given 10 weights in the same shape and color, one of which is slightly heavier than the rest. Using a balance, what is the smallest number of weighing that you can **always** find out the heavier weight?

- A) 1 B) 2 C) 3 D) 4 E) 5

14. The current of a river is 3 miles per hour. The speed of a motorboat going downstream is $1\frac{2}{3}$ times as fast as going upstream. It takes the motorboat a total of 2 hours 40 minutes to make a round trip between A and B; A and B are positions in the river. Find the distance between A and B in miles.

- A) $17\frac{2}{3}$ B) 15 C) $13\frac{3}{4}$ D) 12 E) $10\frac{2}{5}$