PowerScore SAT Free Help Area

SAT Math

Hard

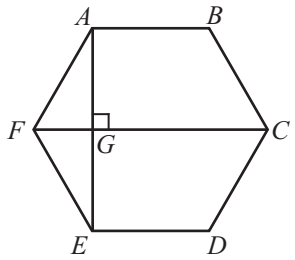
You may have been told that the SAT is hard, but how hard is it? These questions represent some of the most difficult math questions you will encounter.

1. A gift shop is going out of business. Prices for all items in the store were assigned in July. Each month after that, the price was 40% less than the price the previous month. If the price of an item was d dollars for July, what was the price for October?

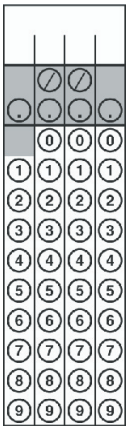
   (A) $0.128d$
   (B) $0.16d$
   (C) $0.2d$
   (D) $0.216d$
   (E) $0.64d$

2. What was the initial number of students enrolled in a high school that now has b students and which lost c students and then gained 100 students?

   (A) $b + c + 100$
   (B) $b + c - 100$
   (C) $b - c + 100$
   (D) $b - c - 100$
   (E) $bc + 100$



3. Figure $ABCDEF$ is a regular hexagon. Line FC bisects angle AFE. If the length of $\overline{ED}$ is 12, what is the length of $\overline{FG}$?



4. For $n \geq -2$, $\circledcirc n = \sqrt{n+2}$. Which of the following is the equivalent of $\circledcirc 14 + \circledcirc 34$?

   (A) $\circledcirc \sqrt{10}$
   (B) $\circledcirc 10$
   (C) $\circledcirc 16$
   (D) $\circledcirc 64$
   (E) $\circledcirc 98$

PowerScore SAT Free Help Area
SAT Math Solutions

Hard

Each of the questions is explained below.

1. A gift shop is going out of business. Prices for all items in the store were assigned in July. Each month after that, the price was 40% less than the price the previous month. If the price of an item was d dollars for July, what was the price for October?

   (A) $0.128d$
   (B) $0.16d$
   (C) $0.2d$
   (●) $0.216d$
   (E) $0.64d$

Rather than mess with complicated formulas, assign a price to d for July. Because the question involves percentages, use 100.

July item (d) = \$100
40% of \$100 = \$40 » \$100 – \$40 = \$60
August item = \$60
40% of \$60 = \$24 » \$60 – \$24 = \$36
September item = \$36
40% of \$36 = 14.40 » \$36 – \$14.40 = \$21.60
October item = \$21.60

Which one of the answer choices multiplied by d (100) equals 21.60?

Choice (D): 0.216(100) = 21.60

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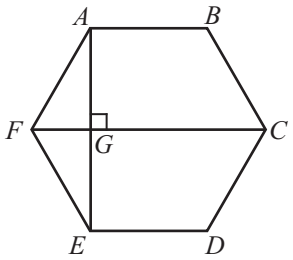
2. What was the initial number of students enrolled in a high school that now has b students and which lost c students and then gained 100 students?

   (A) $b + c + 100$
   (●) $b + c - 100$
   (C) $b - c + 100$
   (D) $b - c - 100$
   (E) $bc + 100$

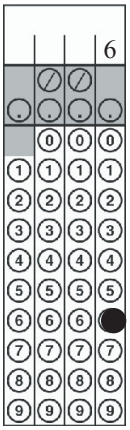
Create simple equations based on the information in the question:

Number of students now: b
Initial number of students = x

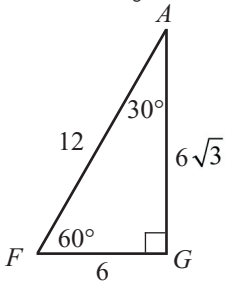
Number of students now = x – c + 100
b = x – c + 100
b + c = x + 100
b + c – 100 = x



3. Figure $ABCDEF$ is a regular hexagon. Line FC bisects angle AFE. If the length of $\overline{ED}$ is 12, what is the length of $\overline{FG}$?



The sum of the interior angles of a hexagon is 720. A regular hexagon has equal sides and angles, so angle AFE = 120° (720°/6 sides) and angle AFG = 60° (bisected means "cut in half"). Triangle AFG is a 30:60:90 triangle. Because ABCDEF is a regular hexagon, AF = ED = 12.



FG = 6

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4. For $n \geq -2$, $\circledcirc n = \sqrt{n+2}$. Which of the following is the equivalent of $\circledcirc 14 + \circledcirc 34$?

   (A) $\circledcirc \sqrt{10}$
   (B) $\circledcirc 10$
   (C) $\circledcirc 16$
   (D) $\circledcirc 64$
   (●) $\circledcirc 98$

According to the function, $\circledcirc 14 = \sqrt{14+2} = \sqrt{16} = 4$ and $\circledcirc 34 = \sqrt{34+2} = \sqrt{36} = 6$, so $\circledcirc 14 + \circledcirc 34 = 4 + 6 = 10$.

Which answer choice equals 10?

(A) $\circledcirc \sqrt{10} = \sqrt{\sqrt{10}+2} = 2.27$ No
(B) $\circledcirc 10 = \sqrt{10+2} = 3.46$ No
(C) $\circledcirc 16 = \sqrt{16+2} = 4.24$ No
(D) $\circledcirc 64 = \sqrt{64+2} = 8.12$ No
(E) $\circledcirc 98 = \sqrt{98+2} = 10$ YES!