STUMPERS 15

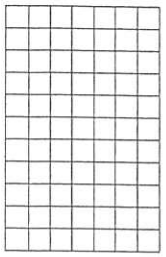
(1) A flat, rectangular board is built by gluing together a number of square pieces of the same size. The board is m squares wide and n squares long. Using the letters m and n, write expressions for

(a) the total number of 1×1 squares;

(b) the total number of 1×1 squares with free edges (the number of 1×1 squares that are not completely surrounded by other squares);

(c) the number of completely surrounded 1×1 squares;

(d) the perimeter of the figure.



(2) . Using the variable x to represent a certain number, write an algebraic expression to represent each of the following:

(a) Eleven more than one third of the number.

(b) Three times the difference between the number and twelve.

(c) Two times the number, decreased by the sum of the number squared and two.

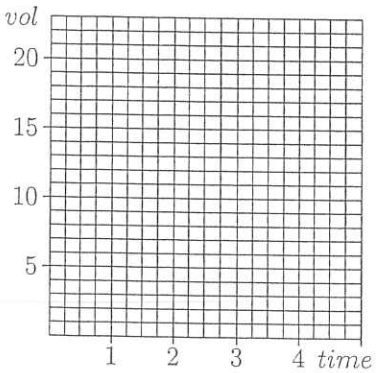
(3) Combine over a common denominator without using a calculator:

(a) $\frac{1}{4} + \frac{1}{5}$ (b) $\frac{1}{10} + \frac{1}{11}$ (c) $\frac{1}{x} + \frac{1}{x+1}$

Evaluate your answer to (c) with $x = 4$ and then with $x = 10$. How do these answers compare to your answers to (a) and (b)?

(4) It takes one minute to fill a four-gallon container at the spring. How long does it take to fill a six-gallon container? Fill in the missing entries in the table below, and plot points on the grid at right.

time	1			2		3		4		5
volume	4	5	6		11		14		19	



(5) Ryan took 25 minutes to type the final draft of a 1200-word English paper. How much time should Ryan expect to spend typing the final draft of a 4000-word History paper?

(6) . Which of the following seven expressions does not belong in the list?

$a - b + c$ $c - b + a$ $c - (b - a)$ $-b + a + c$ $a - (b - c)$ $b - (c - a)$ $a + c - b$

(7) Last week, Chris bought a DVD for \$10.80 while the store was having a 25%-off sale. The sale is now over. How much would the same DVD cost today?

(8) . Forrest is texting while driving along the freeway at 70 miles per hour. How many feet does the car travel during the 3-second interval when Forrest's eyes are not on the road?