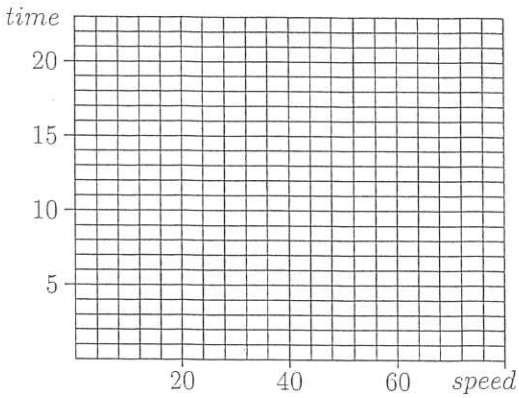
STUMPERS 17

(1) Alden paid to have some programs printed for the football game last weekend. The printing cost per program was 54 cents, and the plan was to sell them for 75 cents each. Poor weather kept many fans away from the game, however, so unlucky Alden was left with 100 unsold copies, and lost $12 on the venture. How many programs did Alden have printed?

(2) The Mount Major hike starts in Alton Bay, 716 feet above sea level. The summit is 1796 feet above sea level, and it takes about 45 minutes for a typical hiker to make the climb. Find the rate at which this hiker gains altitude, in feet per minute.

(3) To do a college visit, Wes must make a 240-mile trip by car. The time required to complete the trip depends on the speed at which Wes drives, of course, as the table below shows. Fill in the missing entries, and plot points on the grid provided. Do the quantities time and speed vary directly? It makes sense to connect your plotted points with a continuous graph. Explain why.

speed	15	20	25			48		60		r
time		12		8	6		4.8		3	

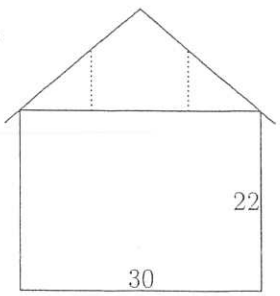


(4) Pat bought several pens at Walgreen's, for 60 cents each. Spending the same amount of money at the Bookstore, Pat then bought some pens that cost 80 cents each. In all, 42 pens were bought. How many pens did Pat buy at the bookstore?

(5) Exeter building code does not permit building a house that is more than 35 feet tall. An architect working on the design shown at right would like the roof to be sloped so that it rises 10 inches for each foot of horizontal run.

(a) Given the other dimensions in the diagram, will the builder be allowed to carry out this plan?

(b) Two vertical supports (shown dotted in the diagram) are to be placed 6 feet from the center of the building. How long should they be?



(6) The line through $(1, 6)$ and $(0, 3)$ passes through every quadrant except one. Which one?

(7) Working together, Merry and Pippin can build a wall in 4.5 hours. If Merry can do the job in 6 hours working alone, how long would it take Pippin to build the wall when working alone?

(8) A small pool is 20 feet long, 12 feet wide and 4 feet deep. There are 7.5 gallons of water in every cubic foot. At the rate of 5 gallons per minute, how long will it take to fill this pool?

(9) Jan walks 2 miles at a constant rate of 3 miles per hour and then runs 1 mile at a constant rate of 8 miles per hour.

(a) What is Jan's average speed for the entire trip?

(b) Is the average speed in part (a) equal to the average of Jan's two speeds?