

SAMPLE PROBLEMS

238. Tillary Flinton plans to run for Governor next year. Her campaign manager has taped a phone message which will be dialed to registered voters in the southern states. The automated system can process 15 calls every 4 minutes.

a. How many calls-per-hour can the system process? _____

The calls will be made from 9 a.m. to 8 p.m., only on weekdays (Monday through Friday).

b. How many voters can the system call during the last 10 weekdays of the campaign?

c. How many months will the system have to operate in order to call 250,000 voters?

i. 1 month ii. 2 months iii. 3 months iv. 4 months v. 5 months

Explain how you got your answer.

247. A watt is a unit used to measure electric power. You are familiar with 60-watt or 100-watt light bulbs; and maybe you have noticed labels such as 1200 watts on hair dryers or 1500 watts on microwave ovens.

a. How many watts is a kilowatt?

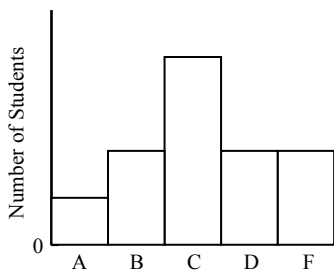
b. How many 40-watt bulbs have the same power as a kilowatt bulb?

c. How many kilowatts of power does a 1500-watt microwave have?

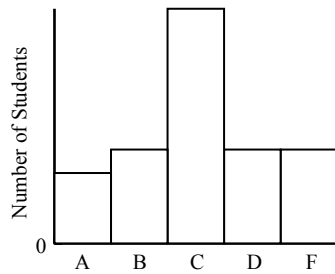
267. The following frequency table shows the test scores on the final math exam for seventh grade students at Gram Middle School.

Score Range	Grade	Frequency (number of students within each range)
53-58	F	6
59-64	F	28
65-70	D	34
71-76	C	36
77-82	C	40
83-88	B	34
89-94	A	14
95-100	A	8

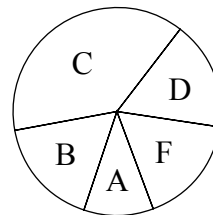
- How many seventh graders took this final exam?
- What percent of the students passed (made D or better)?
- Which of these graphs represent the grade distribution for the exam?
For each graph that does not represent the grade distribution, explain why it doesn't.



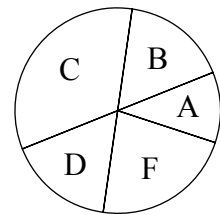
Graph I



Graph II



Graph III



Graph IV

277. A hospital patient is receiving liquids through an IV tube at a constant rate of 12 drops per minute.

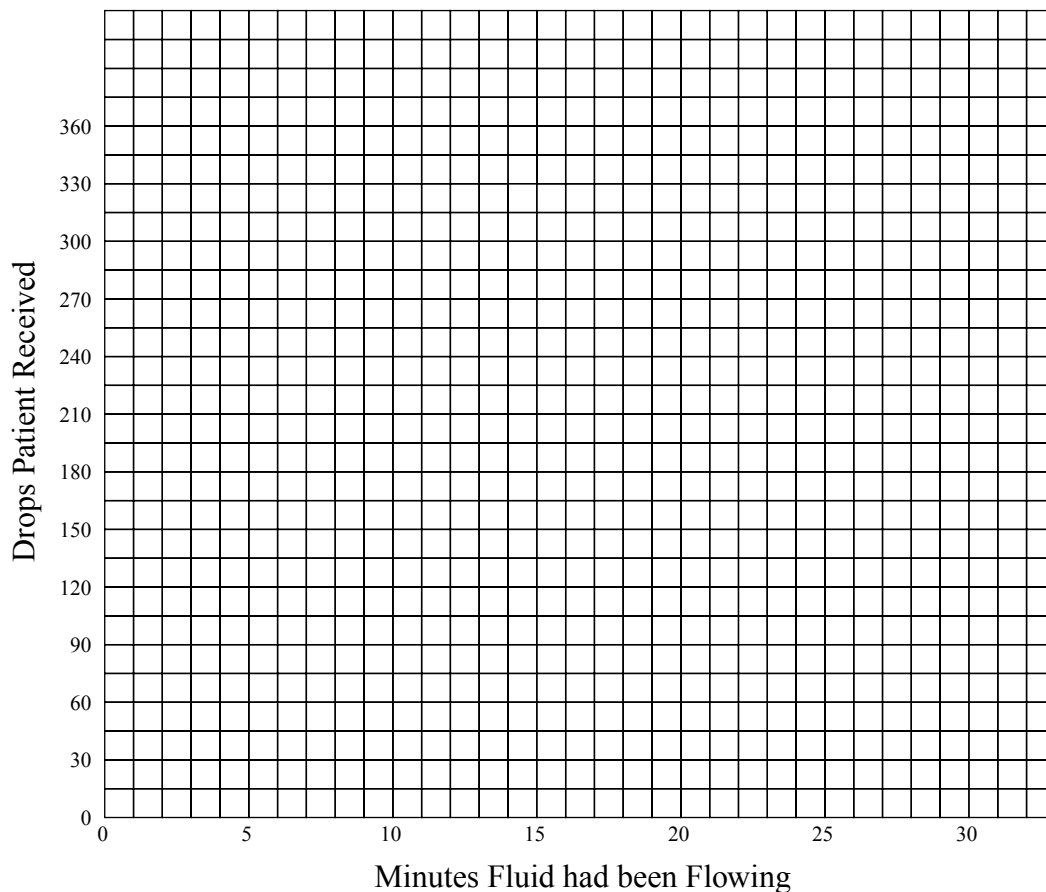
This chart shows the relationship between the number of minutes the liquid has been flowing and the drops of liquid the patient has received.

a. Fill-in the missing numbers in the chart:

Minutes	0	1	5	?	30	?
Drops	?	?	?	120	?	300

b. Fill-in: The liquid is flowing at the rate of _____ drops per hour.

c. Plot points on this grid to represent the information in the chart.



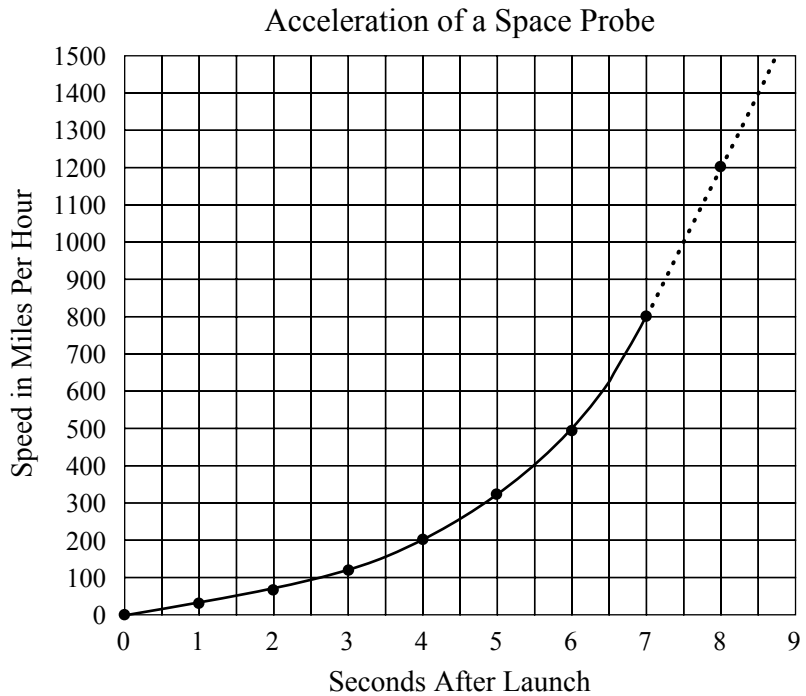
d. Connect the points from left to right to form a graph of the relationship.

e. Could you have predicted, before plotting any points, that all of the points would lie on a line?

Explain your answer.

285. Notice that this graph is a solid path. This means that the speed of the Probe was continuously recorded. So every point of the graph represents actual data—not just those which are highlighted for whole minutes.

- About how long after launch was the Probe traveling at 150 miles per hour?
- About how fast was the Probe traveling 6.5 seconds after launch?



Suppose this pattern of acceleration continued for several more seconds. This is represented in the dotted extension of the graph.

- About how fast was the Probe traveling 7.5 seconds after it was launched?
- About how many seconds after launch did it reach a speed of 1400 miles per hour?

393. At U-Save supermarket, stock records are updated every day. The number of items sold are represented by negative numbers (they have been removed from stock), and the number of items received from a supplier are recorded as positive numbers (they have been added to the stock).

The chart at right shows the last ten entries in the stock record for cases of Diet Cola.

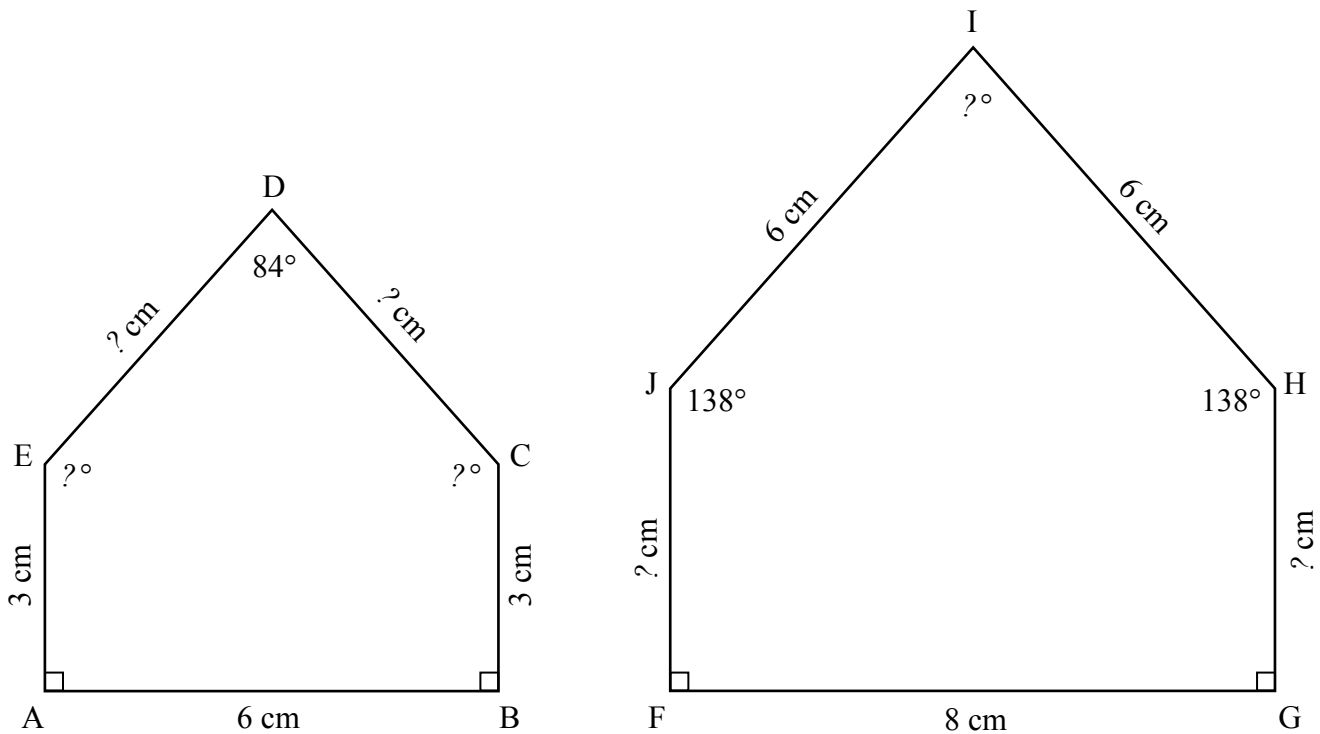
- What is the net result (sum) of these entries?
- Explain what you did to find this sum.
- Suppose there were 186 cases of Diet Cola in stock when the first entry was made in this chart. How many cases were in stock after the tenth entry?

Number of cases of Diet Cola

-58
-73
240
-62
-95
-81
150
-56
-73
-64

293. The two figures shown below are similar. Their sides correspond this way: floor of little “house” to floor of big “house”; left wall of little “house” to left wall of big “house”; etc.

- What two special properties do similar figures have?
- Without using a protractor, find the angle measurements which are represented by question marks in these figures.
- What is the ratio of the length of each side in the little house to the length of the corresponding side in the big house?
- Find the lengths which are represented by question marks in the figures.



415. At Rolling Dough Bakery, all types of donuts cost \$4.20 per dozen. Mrs. Krantz bought these donuts for an after-prom breakfast:

$1\frac{3}{4}$ dozen glazed; $3\frac{1}{2}$ dozen cream-filled;

$2\frac{5}{6}$ dozen sugar-coated; $2\frac{2}{3}$ dozen chocolate-covered.

- How many dozens of donuts did she buy altogether?
- What was the cost of all the donuts that Mrs. Krantz bought?
- Everyone at the breakfast ate 2 donuts, and there were five donuts left over. How many people were at the breakfast?
- Write the correct numbers to complete this equation:
(____ donuts per person \times ____ people at breakfast) + ____ donuts = ____ donuts
- In the equation in part d., the product in parentheses represents which of these quantities?
 - the number of donuts left over
 - the number of donuts eaten at the breakfast
 - the total number of donuts that Mrs. Krantz bought

298. A 25-foot ramp is used to move cargo from trucks onto a warehouse deck. The deck is 7 feet above ground.

How far is it along the ground from the bottom of the ramp to the deck? (Notice that this distance is designated as j in the diagram.)

