Use additional paper as needed.

School Garden

Springville Middle School orders three different types of bulbs for the students to plant. In early October, thirty-two students are selected to plant various amounts of lilies, tulips and alliums.

Each of the 32 students will plant one lily bulb.

1. What is the price for the lily order? Use the ratio table below to calculate the price for ordering 32 lily bulbs. Add more columns if necessary.
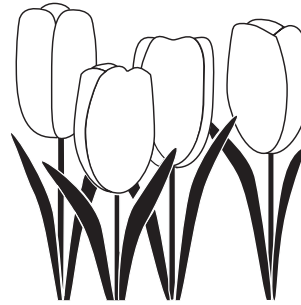
Number of Lily Bulbs	2				
Price (in dollars)	7.50				

Lilies
2 bulbs for $7.50

Each of the 32 students will get three tulip bulbs to plant. 1 package of 6 bulbs costs $8.25.

2. a. How many tulip bulbs will they need altogether?

b. What will be the total cost for tulip bulbs that need to be ordered? Show your work.

Tulips
6 bulbs for $8.25

Each of the 32 students will get one allium bulb to plant.

3. a. How many packages of allium bulbs need to be ordered? Show your work.

b. Estimate the total cost of the allium bulbs.
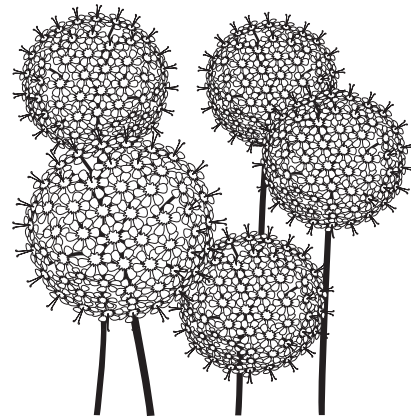
Allium
1 package of 5 bulbs for $7.99

Fund Raising

All students of Springville Middle School will raise money for the school library. The goal is to collect a total of $6,000 from fall to spring. Each month, the total amount collected will be shown on the "thermometer," as pictured on the right.

4. How much money was collected by the end of October? Feel free to write on the thermometer

By the end of December, the total amount collected is about $2,000 out of $6,000.

**5. a.** Fill in the bar below to indicate that $2,000 is collected so far.

$0 $6,000

0%   100%
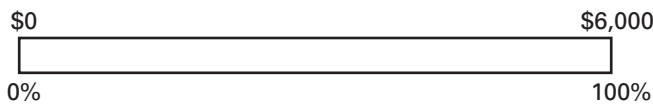
b. What percentage was reached on the bar above?

In late April, the fund raising thermometer is at 95%.

6. How much money do they still need to reach their goal? Show your calculations.

In May, they were pleasantly surprised! They collected more than 100%! They collected $6,600. This percentage cannot be shown on the thermometer.
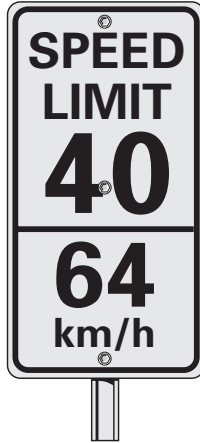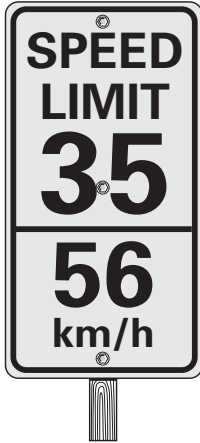
7. What is this percentage? Show your work.

$6,000

100% $6,000

75%

50%

25%

October

0%
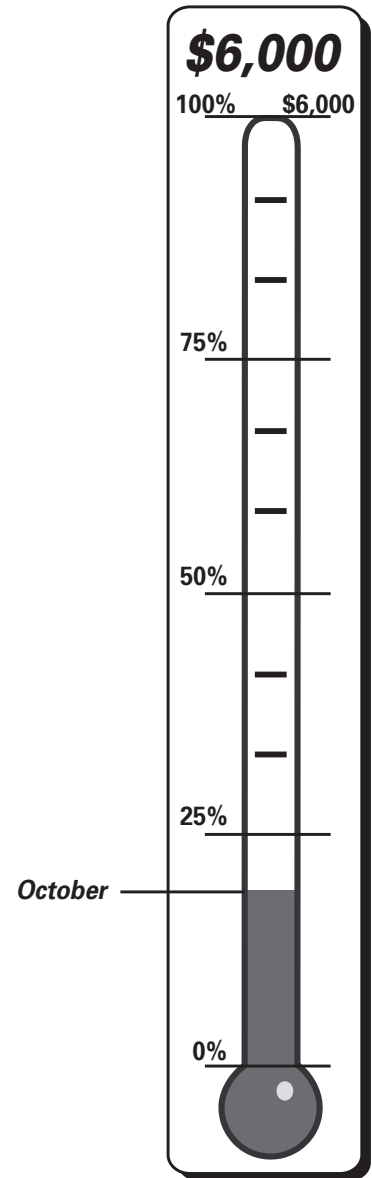
Use additional paper as needed.

Speed Limit

These signs are on a road in Mitchell, South Dakota.
On each sign, the numbers at the bottom show the speed limit in
kilometers per hour.

SPEED
LIMIT
35
56
km/h

SPEED
LIMIT
40
64
km/h

8. a. What do the numbers on top of the signs represent?

   b. Use the information shown in the drawings to create a new
   sign. Show how you calculated the numbers in the new sign.

SPEED
LIMIT

km/h
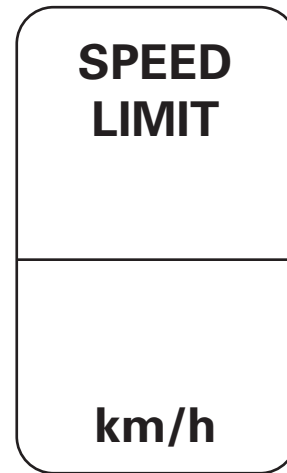
   c. A new sign is needed for a school zone with a speed limit of
   20 miles per hour. What should the bottom number on the
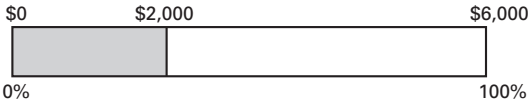   new sign be?

d. The Thalys high speed train in Europe has a top commercial speed of 300 kilometers per hour. Use the information on the signs from problem 8 to help you estimate the train's speed in miles per hour.

Possible student answer	Suggested number of score points	Problem level
1. Answer: $120 Strategies may vary. Sample strategy using doubling:	2	I

Number of Lily Bulbs	2	4	8	16	32
Price (in dollars)	7.50	15	30	60	120

	Suggested number of score points	Problem level
2. a. Answer: 96 Bulbs	2	I
b. Answer: $132 Strategies may vary. Sample strategy:	2	I

Three tulip bulbs for 32 students; need 96 bulbs. (3 × 32 = 96 bulbs). The goal is to build up to 96 bulbs.

Number of Tulip Bulbs	6	60	30	96
Price (in dollars)	8.25	82.50	41.25	132

Or:

One student needs 3 bulbs and 6 bulbs are in one package. Two students share one package.

32 students make 16 pairs, so they need to order 16 packages. The goal is to build up to 16 packages.

Number of Packages	1	2	4	8	16
Price (in dollars)	8.25	16.50	33	66	132

	Suggested number of score points	Problem level
3 a. Seven packages. Sample reasoning:	1	I

Six packages make 30 bulbs. I need two more bulbs, order seven packages.

	Suggested number of score points	Problem level
b. A little less than $56. Strategies may var. Sample strategies, using $8.00 for $7.99:	2	I

Seven packages, 5 per package, I need 35 bulbs. The goal is to build up to 35 bulbs.

Number of Allium Bulbs	5	10	20	35
Price (in dollars)	8	16	32	56

Or:

The goal is to build up to 7 packages.

Number of Packages	1	7
Price (in dollars)	8	56

Possible student answer	Suggested number of score points	Problem level
4. Answer: $1,000 Strategies may vary. Sample strategy: I noticed that each quarter was divided into thirds. This makes 12 equal parts for the entire $6,000. Two parts of the twelve are shaded. At first I thought this would be messy, since I didn't have my calculator. But then I remembered two out of twelve is the same as one out of six. This made the problem much easier; one-sixth of $6,000 is $1,000.	**1**	**I**
5. a. One third of the bar should be shaded. $0 $2,000 $6,000 0% 100%	**1**	**I/II**
b. Answer: $33\frac{1}{3}\%$. Accept 33% with justification. Sample justification for $33\frac{1}{3}\%$: $2,000 is $\frac{1}{3}$ of $6,000, so $\frac{1}{3}$ of 100% is $33\frac{1}{3}\%$.	**2**	**II**
6. Answer: $300. Calculations may vary. Sample explanation using a percent bar: $0 $6,000 0% 95% 100% After shading 95%, I realized I am only 5% short of the goal. I know 10% of $6,000 is $600. Half of 10% is 5%, so half of $600 is $300.	**2**	**I/II**
7. Answer: 110% Sample explanation: $6,000 is 100%, and I need to account for $600 more. Lucky for me, I know $600 is 10% of $6,000, so together they have 100% + 10% or 110%. This means $6,600 is 110% of $6,000.	**1**	**III**

Possible student answer	Suggested number of score points	Problem level
8 a. The speed limit in miles per hour.	1	I
b. Answers may vary. Sample response using a ratio table and the sign information:	2	III
c. The speed limit in a school zone should be 32 km/h. This amount is found by halving the 40/64 sign.	1	I
d. 300 km/h is approximately 186 mi/h. Accept answers $+/-$ 10 mph with supporting work.	2	II/III
Total score points	22	

For b.:

Mile per Hour (mi/h)	40	35	75	20	60	10	5	55	65
Kilometers per Hour (km/h)	64	56	120	32	96	16	8	88	104

For d.:

mi/h	40	35	75	150	185	190
km/h	64	56	120	240	296	304