Name _____

1. Use the data from the frequency table to make a picture graph.

Data	**Favorite Pizzas**		
	Pizza	**Tally**	**Frequency**
	Cheese	⫟⫟⫠ ///	8
	Pepperoni	⫟⫟⫠ ⫟⫟⫠ //	12
	Sausage	⫟⫟⫠ /	6
	Hawaiian	////	4

Part A

Circle the key you will use.

🍕 = 1 pizza   🍕 = 2 pizzas

🍕 = 3 pizzas   🍕 = 4 pizzas

Part B

Draw a picture graph.

2. Use the data from the picture graph you made in Question 1. How many students did **NOT** choose sausage as their favorite pizza?

Ⓐ 8 students

Ⓑ 12 students

Ⓒ 16 students

Ⓓ 24 students

3. Mary made a picture graph to show how many miles she ran each week. In which week or weeks did she run 8 miles?

Miles Run in July	
Week 1	👟 👟 👟 👟
Week 2	👟 👟 👟
Week 3	👟 👟 👟 👟

Each 👟 = 2 miles. Each 👟 = 1 mile.

Ⓐ Week 1   Ⓒ Weeks 1 and 3

Ⓑ Week 3   Ⓓ Weeks 2 and 3

4. Look at the picture graph above. How many total miles did Mary run?

5. How many more miles did Mary run in Weeks 2 and 3 than in Week 1?

6. Mr. Rudolph's class made a bar graph of the number of pets each student has. How many students in the class have 3 pets?

Pets

Ⓐ 0

Ⓒ 3

Ⓑ 2

Ⓓ 5

7. Choose the number of pets that is most common in Mr. Rudolph's class. You can pick more than one answer.

☐ 0   ☐ 3

☐ 1   ☐ 5

☐ 2

8. How many students in the class have 2 or fewer pets?

9. Jarod is making a bar graph to compare how many sports cards he has for each sport. He has 32 baseball cards, 24 football cards, 12 soccer cards, and 16 basketball cards. Which scale makes the most sense for Jarod to use with his graph?
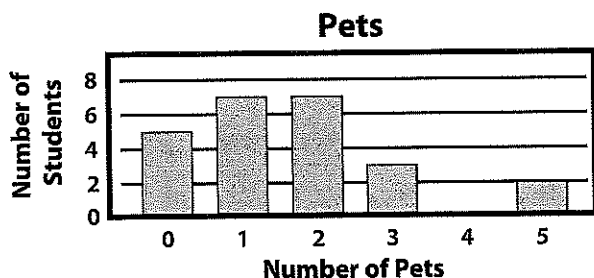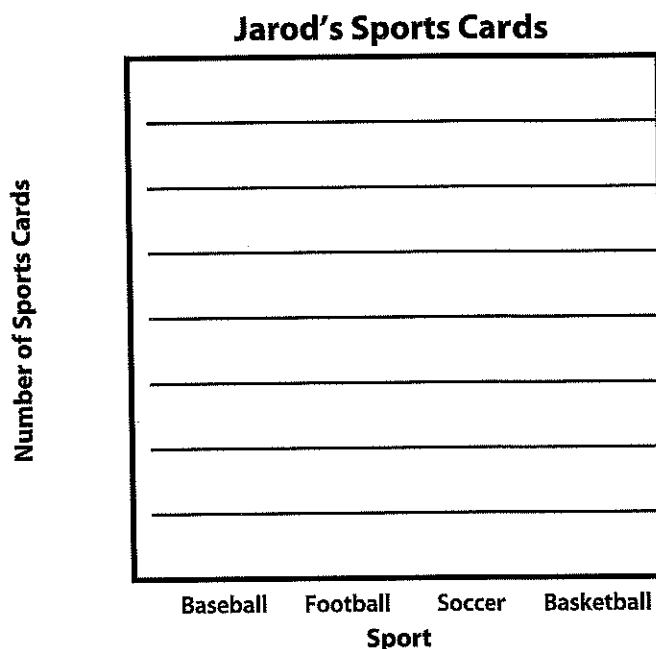
Ⓐ Each grid line equals 1 sports card.

Ⓑ Each grid line equals 4 sports cards.

Ⓒ Each grid line equals 8 sports cards.

Ⓓ Each grid line equals 10 sports cards.

10. Use the information in Question 9 to make a bar graph of Jarod's sports cards.

Jarod's Sports Cards

Baseball   Football   Soccer   Basketball
Sport

11. For Questions **11a–11d**, choose Yes or No to tell if each sentence is true. Use the information from Question 9.

11a. Jarod has more basketball and soccer cards than football cards.

○ Yes   ○ No

11b. Jarod has more football cards than soccer and basketball cards.
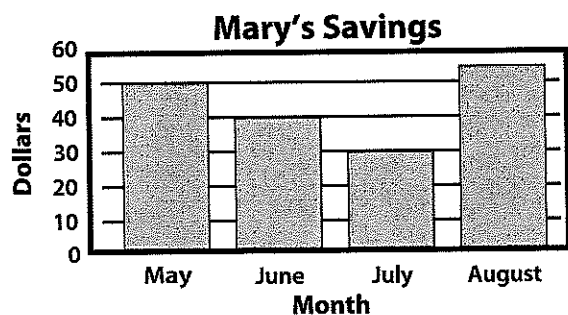
○ Yes   ○ No

11c. Jarod has fewer baseball cards than football and basketball cards.

○ Yes   ○ No

11d. Jarod has fewer football cards than baseball and soccer cards.

○ Yes   ○ No

12. The graph shows the amount of money Mary saved in each of 4 months. In which month did she save the most money?

Mary's Savings

Ⓐ May

Ⓑ June

Ⓒ July

Ⓓ August

---

13. Look at the bar graph above. Suppose Mary saved $35 in September. Where would the bar end?

---

14. Did Mary save more money in August than in June and July? Explain.

15. The frequency table below shows the number of birds at Ernie's feeder each day at noon. Use the data to make a picture graph.

Birds at Ernie's Feeder

Day	Tally	Number of Birds
Monday	𝍷𝍷𝍷 𝍷𝍷𝍷 𝍷𝍷𝍷 𝍷𝍷𝍷 ////	24
Tuesday	𝍷𝍷𝍷 𝍷𝍷𝍷 𝍷𝍷𝍷 /	16
Wednesday	𝍷𝍷𝍷 𝍷𝍷𝍷 //	12
Thursday	𝍷𝍷𝍷 𝍷𝍷𝍷 𝍷𝍷𝍷 𝍷𝍷𝍷 𝍷𝍷𝍷 ///	28
Friday	𝍷𝍷𝍷 ///	8

Part A

Circle the key you will use.

🐦 = 1 bird   🐦 = 2 birds

🐦 = 4 birds   🐦 = 8 birds
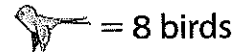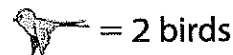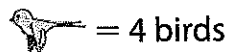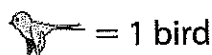
Part B

Draw a picture graph.

16. Look at the picture graphs below. Which kind of pie was chosen by the same number of students in each class?

Class A's Favorite Pie	
Apple	(pie)(pie)(pie)(pie)(pie)
Cherry	(pie)(pie)(slice)
Pumpkin	(pie)(pie)
Each (pie) = 2 students.	
Each (slice) = 1 student.	

Class B's Favorite Pie	
Apple	(pie)(pie)(pie)(slice)
Cherry	(pie)(pie)(slice)
Pumpkin	(pie)(pie)(pie)
Each (pie) = 2 students.	
Each (slice) = 1 student.	

Ⓐ Apple

Ⓑ Cherry

Ⓒ Pumpkin

Ⓓ None of the above

17. In Class A how many more students like apple than cherry and pumpkin combined?

18. Chase has $29 to spend on decorations. He wants to buy at least one banner, three balloons, and one pennant. What combination of decorations can he buy if he spends all of his money?

Party Decorations

Number to Buy: 12, 8, 4, 0

Banner ($8 each)   Balloon ($1 each)   Pennant ($3 each)

Item
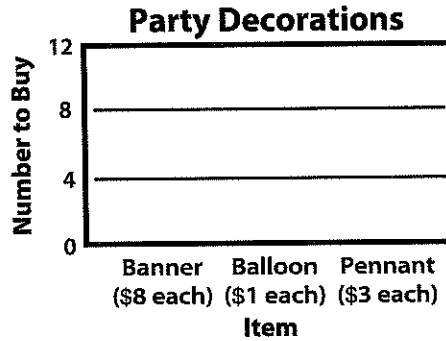
Part A

What given information will you use to solve the problem?

Part B

Solve the problem. Explain your thinking and show the supplies he can buy on the bar graph.

Name _____

1. Write the numbers that make this equation true.

$5 + (1 + \underline{\hspace{1cm}}) = (5 + \underline{\hspace{1cm}}) + 3$

2. A teenage black bear in a zoo weighs 109 pounds. A mother black bear weighs 168 pounds. Choose all the equations that show a reasonable estimate for how much they weigh together.

☐ $100 + 200 = 300$

☐ $150 + 150 = 300$

☐ $110 + 170 = 280$

☐ $105 + 165 = 270$

☐ $120 + 180 = 300$

3. Juanita wants to find $473 + 102$ mentally. Which of the following should she do first to find the sum?

Ⓐ Add 2 to 473 and add 2 to 102.

Ⓑ Subtract 3 from 473 and add 2 to 102.

Ⓒ Add 2 to 473 and subtract 2 from 102.

Ⓓ Subtract 3 from 473 and subtract 2 from 102.

4. Estimate the difference of 825 and 213.

5. Look at the sums in the shaded row and column. Look at the addends. What pattern do you see? Explain why this pattern is always true.

+	0	1	2	3	4	5
0	0	1	2	3	4	5
1	1	2	3	4	5	6
2	2	3	4	5	6	7
3	3	4	5	6	7	8
4	4	5	6	7	8	9
5	5	6	7	8	9	10

6. Jon wants to use mental math to add 526 and 213. Which of these shows how to break apart the numbers into hundreds, tens, and ones?

Ⓐ Break 526 into $500 + 20 + 6$. Break 213 into $200 + 13$.

Ⓑ Break 526 into $500 + 20 + 6$. Break 213 into $200 + 10 + 3$.

Ⓒ Break 526 into $500 + 26$. Break 213 into $200 + 10 + 3$.

Ⓓ Break 526 into $500 + 26 + 6$. Break 213 into $200 + 13 + 3$.

7. The Village of Hampton has 436 families. 238 of the families live within 1 mile of the village square. Use mental math to find how many families live farther than 1 mile from the square. Show your work.

8. Choose all the equations that are true.

☐ $100 + 170 = 170 + 100$

☐ $0 + 93 = 93$

☐ $(100 + 10) + 170 = 110 + (10 + 170)$

☐ $32 + (4 + 115) = (32 + 4) + 115$

☐ $43 + 0 = 0$

9. The table shows the scores for 4 teams in the Math Bowl.

Math Bowl

Team	Score
A	325
B	296
C	291
D	312

Write the letter A, B, C, or D above the number line to show each team's score rounded to the nearest ten.

270   280   290   300   310   320   330
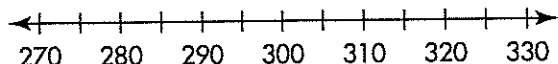
10. Miri added 183 and 45. Her work is shown below.

$$\begin{array}{r} 183 \\ +\ 45 \\ \hline 228 \end{array}$$

Do the strategies below show a way to check her work using inverse operations? Choose *Yes* or *No*.

10a. Subtract 45 from 183. ○ Yes ○ No

10b. Add 228 and 45. ○ Yes ○ No

10c. Subtract 45 from 228. ○ Yes ○ No

10d. Add 228 and 183. ○ Yes ○ No
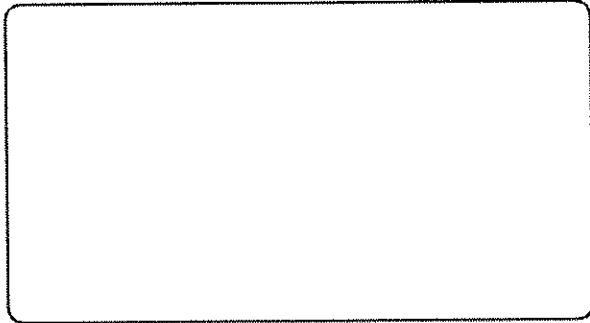
11. Heather wants to round to the nearest hundred to estimate the sum of 315 and 491. She wrote $320 + 490 = 810$. Do you agree with Heather? Explain why or why not.

12. George subtracts 432 from 668 and gets 236. What addition equation can he use to check his answer? Draw a bar diagram to show how the numbers in this problem are related.

13. Charlie wants to buy a tennis racket for $165 and a case of tennis balls for $99. He can buy a bag for the racket for $47.
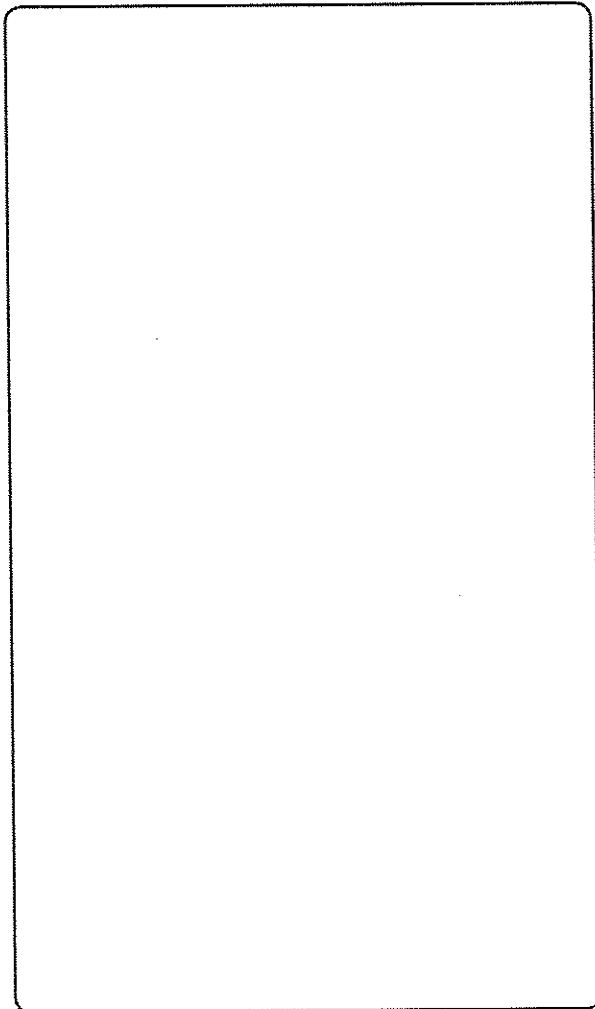
Part A

Draw a bar diagram that you can use to find the total cost of the items.

Part B

What is the first step you would do to solve this problem using mental math?

14. Jacinta wants to subtract 103 from 387 mentally. First she subtracts 3 from 103 to get 100. What should Jacinta's next step be? What is the difference?

Ⓐ   Add 3 to 387. The difference is 287.

Ⓑ   Add 100 to 387. The difference is 487.

Ⓒ   Subtract 3 from 387. The difference is 284.

Ⓓ   Subtract 3 from 387. The difference is 287.

15. Draw lines to match each number on the left with the number on the right that shows rounding to the nearest hundred.
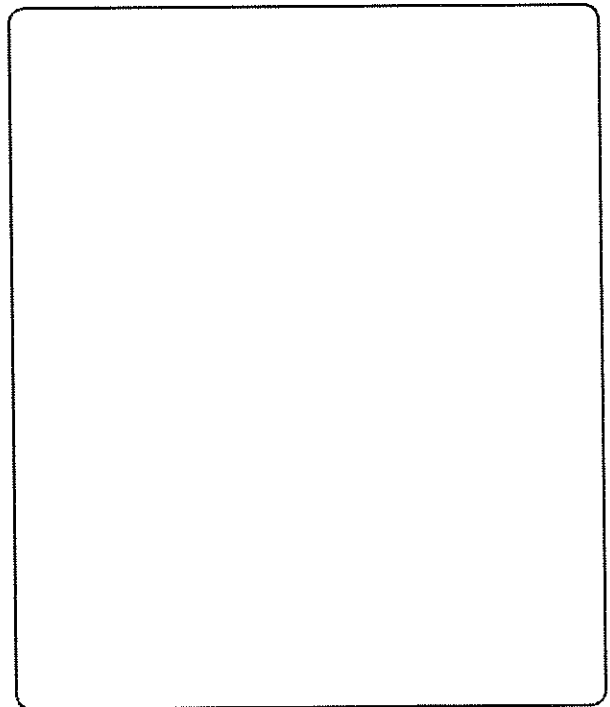
732		400
555		700
449		500
498		600

16. Explain how to use mental math to find 530 − 166.
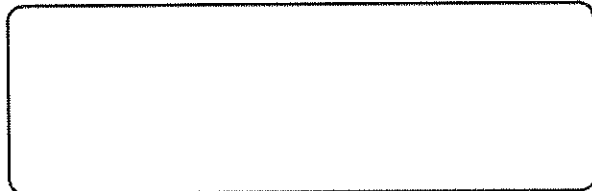
17. Lauren found 765 − 321. The difference she found was 444. What should she do to check her answer, and what will she find?

Ⓐ Subtract. 765 − 300 = 465
Her original answer was incorrect.

Ⓑ Add. 321 + 444 = 765
Her original answer was correct.

Ⓒ Add. 300 + 444 = 744
Her original answer was correct.

Ⓓ Subtract. 444 − 321 = 123
Her original answer was correct.

18. Mary earned $345 babysitting in June. In July she earned $209. She wants to estimate how much more she earned in June than in July.
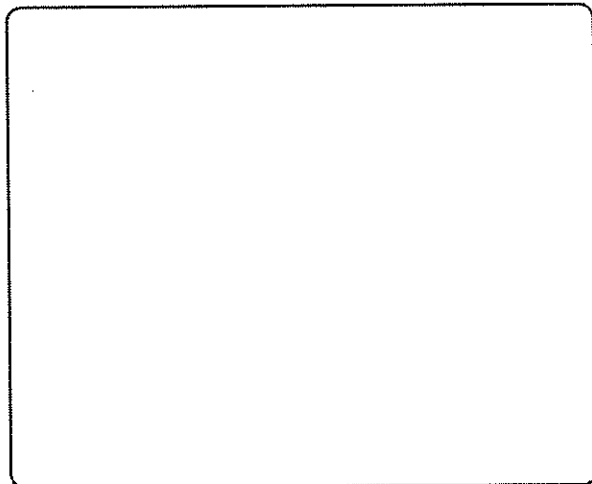
Part A

What compatible numbers could she subtract to get a reasonable estimate?

Part B
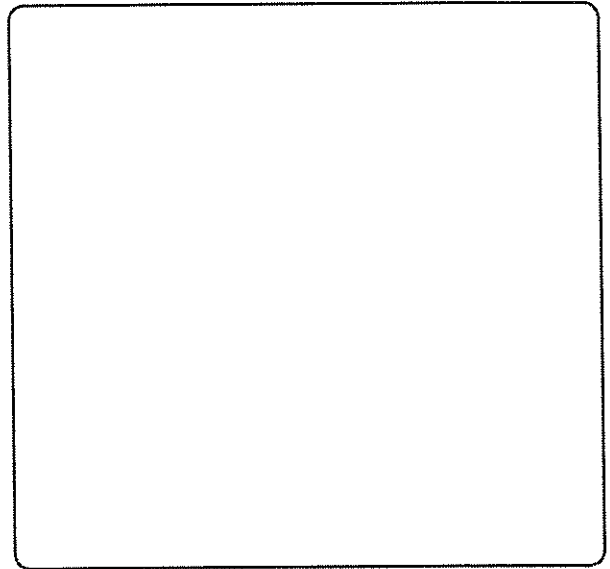
Estimate how much more she earned in June using two different ways.

19. In a newspaper recycling project, Grade 4 collected 48 pounds more than Grade 3. Grade 3 collected 104 pounds more than Grade 5. Grade 4 collected 372 pounds. How many pounds of newspaper did Grade 5 collect?
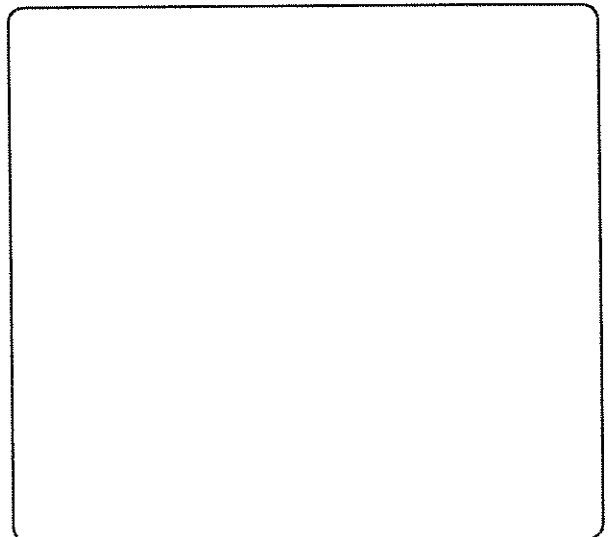
Part A

Use a bar diagram to represent the hidden question. Then answer the hidden question.

Part B

Use an equation to represent the main question. Then answer the main question.

1. Melinda is finding the sum of 458 and 342 by breaking it into smaller problems. She uses place value and finds the sums of the hundreds, tens, and ones. Write each digit to show the correct place value. Then show how to break apart the addends to solve.

Hundreds	Tens	Ones
5 3	4 8	4 2

2. Joe finds the difference of $756 - 319$. First he estimates using compatible numbers. He finds $750 - 300 = 450$. Then he finds the difference is 337. Do you agree with Joe's answer? Explain why or why not.

3. For 3a-3d, choose Yes or No to say if the addends are broken apart correctly.

   3a. $156 + 209$
   $(100 + 200) + (50 + 10) + (6 + 9)$
   ○ Yes   ○ No

   3b. $332 + 458$
   $(300 + 4) + (30 + 5) + (2 + 8)$
   ○ Yes   ○ No

   3c. $640 + 109$
   $(600 + 100) + 40 + 9$
   ○ Yes   ○ No

   3d. $290 + 209$
   $(200 + 200) + (90 + 10) + 9$
   ○ Yes   ○ No

4. Mr. Brown drove 212 miles on Monday. On Tuesday he drove 69 miles. He drove another 183 miles on Wednesday. How many total miles did he drive over the 3 days?

   Ⓐ 464 miles

   Ⓑ 454 miles

   Ⓒ 364 miles

   Ⓓ 354 miles

5. Last month, Alice road her bike 219 miles. Her brother Charles rode his bike 196 miles. Both Alice and Charles took 18 rides. How many miles did they ride?

Ⓐ 397 miles

Ⓑ 405 miles

Ⓒ 415 miles

Ⓓ 433 miles

6. Mario has 311 tokens. He uses 185 of them to download a game to his tablet and 19 of them to add a character to another game. How many tokens does he have left?

7. Cows at the Wolf dairy farm produced 300 gallons of milk on Thursday. A local ice cream maker purchased 165 gallons of this milk. There are 50 cows on the farm. How many gallons are left to sell?

Ⓐ 85 gallons

Ⓑ 135 gallons

Ⓒ 415 gallons

Ⓓ 465 gallons

8. At Lincoln Elementary, there are 88 students in Grade 1 and 116 in Grade 2. Grade 3 has 164 students enrolled.

Part A

Is the number of students in Grades 1 and 2 greater than the number of students in Grade 3? Make a conjecture.

Part B

Construct an argument to prove your conjecture.

9. Last year, Earl added $763 to his savings account. His brother Jim added $547 to his savings. Which shows how much more Earl saved?

Ⓐ $116

Ⓑ $216

Ⓒ $226

Ⓓ $261

10. Mrs. Myers buys 200 yards of fabric. She uses 128 yards for curtains. Then she makes place mats for a craft sale and uses another 23 yards. How many yards does she have left?

11. At an art festival, Mr. Jessup sold one painting for $178 and another for $125. He spent $85 for art supplies. How can Mr. Jessup find out how much money he had left? Choose all that apply.

☐ Add $85 and $125; then subtract $178.

☐ Add $178 and $125; then subtract $85.

☐ Subtract $85 from $125; then add $178.

☐ Add $178 and $85; then subtract $125.

☐ Add $125 and $178; then subtract $85.

12. Describe how to regroup to solve the subtraction problem below. What is the difference?

$$\begin{array}{r} 456 \\ -\ 238 \\ \hline \end{array}$$

13. Nick is finding the difference between 362 and 161.

Part A

Does Nick need to regroup? If he does, explain how he should regroup. If he does not, explain why he does not.

Part B

Find the difference.

14. Put the steps in order to find 893 − 435.

Subtract 463 − 5	1st step
Subtract 893 − 400	2nd step
Subtract 493 − 30	3rd step

15. Mary earned $345 babysitting in June. In July she earned $209, and she earned $198 in August. How much more did she earn in July and August than in June?

16. Maddie uses place value to subtract 342 from 563. How many times does she need to regroup?

Ⓐ 3

Ⓑ 2

Ⓒ 1

Ⓓ 0

17. Mr. Dillard spent $328 on gasoline last month. Mrs. Marks spent $293. Mr. Chu spent $493. How much more did Mr. Chu spend on gasoline than Mr. Dillard?

Ⓐ $35

Ⓑ $165

Ⓒ $175

Ⓓ $200

18. The distance from Columbus to Dayton is 114 kilometers. The distance from Columbus to Cincinnati is 164 kilometers and from Columbus to Cleveland is 229 kilometers. How much farther is it from Columbus to Cleveland than from Columbus to Cincinnati?

1. Adam gives each of his 5 friends a baseball card album. Each album holds 30 cards. How many cards can the albums hold in all? Use the open number line to solve.

<----------------------->

2. For questions 2a–2d, choose *Yes* or *No* to tell if the expression is equal to 7×40.

   2a. $(7 \times 4) \times 10$ ○ Yes ○ No

   2b. $(7 + 4) \times 10$ ○ Yes ○ No

   2c. 4×70 ○ Yes ○ No

   2d. $7 \times (4 \times 40)$ ○ Yes ○ No

3. Mr. Blaine is building a deck and bought 9 boxes of bolts. There are 40 bolts in each box. How many bolts did Mr. Blaine buy? Explain how to solve.

4. Betty is making bracelets and needs 6 boxes of blue beads and 2 boxes of white beads. Each box of beads contains 20 beads. How many beads does Betty need?

   Ⓐ 120

   Ⓑ 160

   Ⓒ 180

   Ⓓ 240

5. Write each expression in the correct answer space to show expressions equal to 4×50 and 8×40.

4×50	8×40

   $(4 \times 5) \times 10$ 32×10

   $(8 \times 4) \times 10$ $5 \times (4 \times 10)$

   20×10 $4 \times (8 \times 10)$

   $(4 \times 8) \times 10$ $(5 \times 4) \times 10$
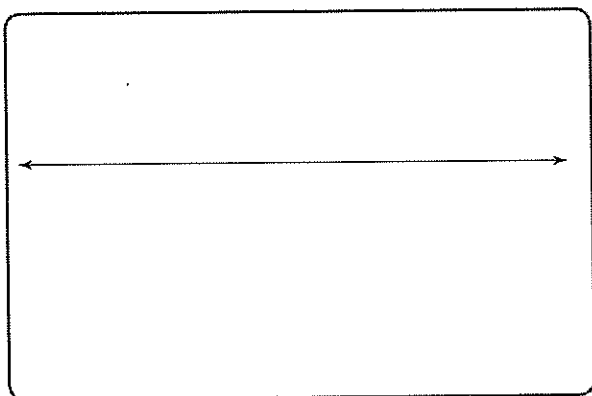
6. Draw lines to connect equal expressions.

5×60	48×10
6×60	40×10
5×80	36×10
6×80	30×10
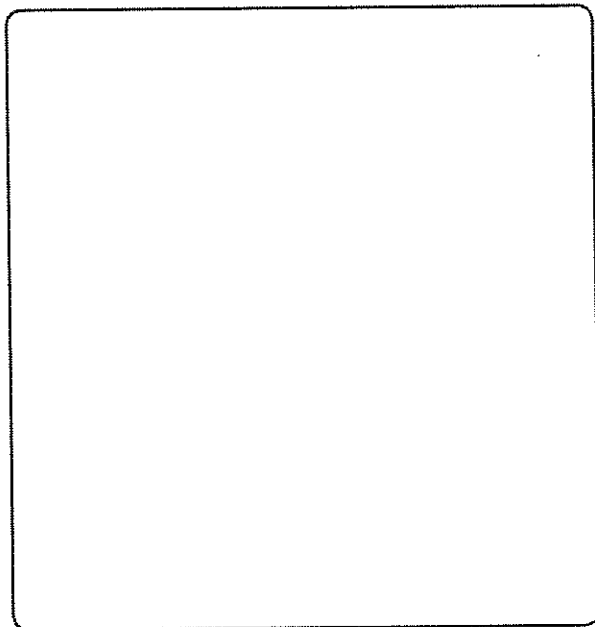
7. To solve 6×40, Heidi wrote
$6 \times (4 \times 10) = (6 \times 4) \times 10$. What is
6×40?

Ⓐ 20

Ⓑ 34

Ⓒ 120

Ⓓ 240

8. Alice reads 50 pages each day. How many pages does she read in 7 days? Use the open number line to solve.

9. The subscription to a children's magazine is $30 per year. Jane sold 7 subscriptions. What was the total cost of the subscriptions? Explain how you can use structure to solve.
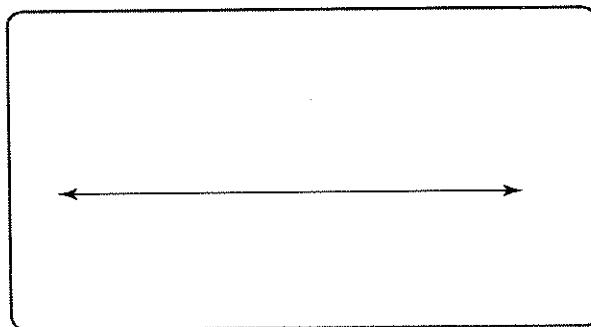
10. Choose all of the expressions that are equal to 3×60.

☐ $(3 \times 6) \times 10$

☐ 9×10

☐ 36×10

☐ 18×10

☐ $6 \times (3 \times 10)$

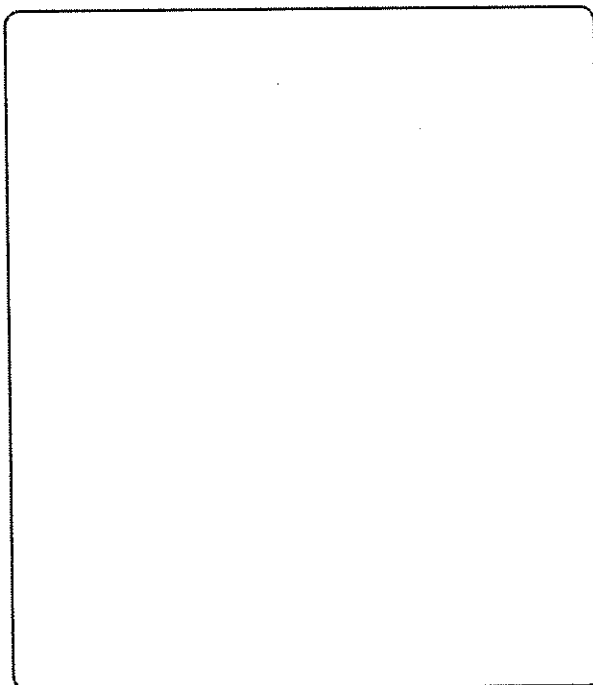**11.** Bethany earns $40 babysitting on Saturdays. How much does Bethany earn for babysitting on 4 Saturdays?

Part A

Use a number line to solve the problem.

Part B

Show another way to solve the problem.