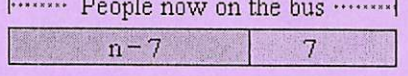
Understanding Bar Diagrams Name _____

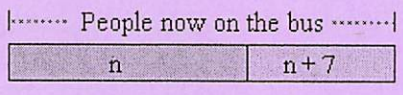
1. Suppose there are n people on a bus. At the next stop, 7 more people get on the bus. No one gets off the bus. Draw a bar diagram to model the number of people now on the bus. Use this model to write an algebraic expression for the number of people now on the bus.

Which bar diagram models the number of people now on the bus?

A.



B.



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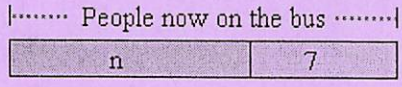

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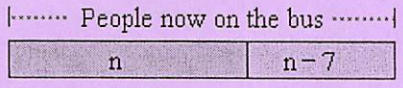

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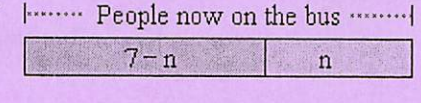

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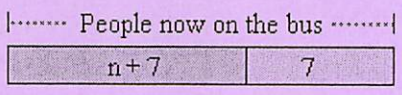
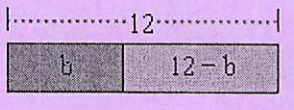


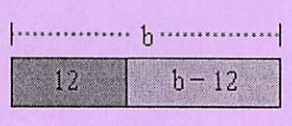
2. Isabella and Juan each have 12 books. Isabella gives Juan b books. Draw bar diagrams to show the number of books each person has now. Use pencil and paper. Draw a third bar diagram that shows how the number of books Isabella and Juan each have relates to their total number of books.

Which bar diagram models the number of books Isabella has now?

A.



B.



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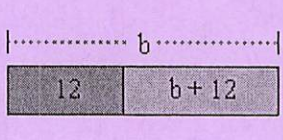

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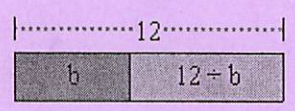
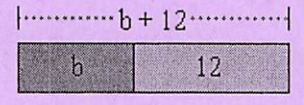
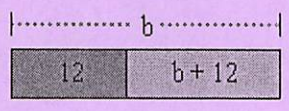


Which bar diagram models the number of books Juan has now?

A



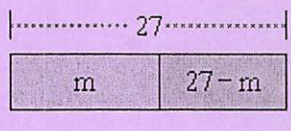
B



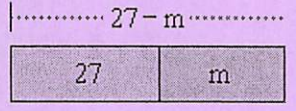
3. You go to the grocery store with $27. You spend m dollars at the store. Draw a bar diagram that shows the number of dollars you have left. Then write an algebraic expression for the number of dollars you have left.

Which bar diagram models the number of dollars you have left?

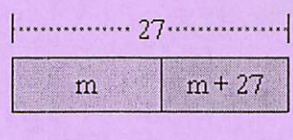
A.



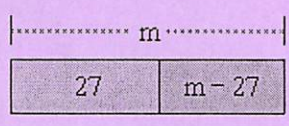
B.



C.



D.



4. **Challenge** Marissa bought 8 notebooks. Her total cost was c. Each notebook was the same price. Draw a bar diagram representing the price of each notebook. Write an algebraic expression for the price of each notebook. Use pencil and paper. What would the bar diagram look like if Marissa bought n notebooks?

○A

c + 8							
c	c	c	c	c	c	c	c

○B.

8							
8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c

○C.

8c							
c	c	c	c	c	c	c	c

○D.

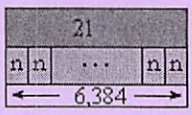
c							
c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8

An algebraic expression for the price of each notebook is _____

5. The employees at a local business make 6,384 photocopies during a normal month. If daily use is steady, about how many copies do the employees make each day? (Hint: There are about 21 work days per month.) Let n be the number of copies made each day.

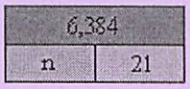
Which bar diagram and equation model the problem?

○A



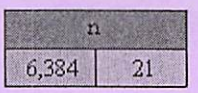
n ÷ 21 = 6,384

○B.



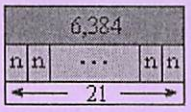
n + 21 = 6,384

○C.



n − 6,384 = 21

○D



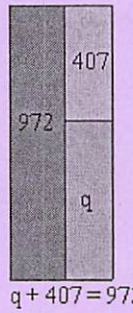
21n = 6,384

The employees make about _____ copies each day.

6. In a city, Building P is 407 feet taller than Building Q. The height of Building P is 972 feet. What is the height q of Building Q?

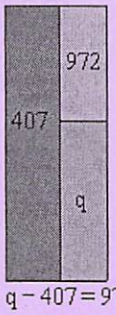
Which diagram and equation represent the problem?

○A



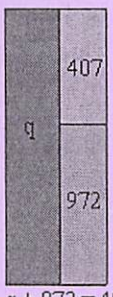
q + 407 = 972

○B.



q − 407 = 972

○C.



q + 972 = 407

What is the height q of Building Q? _____

Understanding Bar Diagrams Name Key

1. Suppose there are n people on a bus. At the next stop, 7 more people get on the bus. No one gets off the bus. Draw a bar diagram to model the number of people now on the bus. Use this model to write an algebraic expression for the number of people now on the bus.

Which bar diagram models the number of people now on the bus?

A.

People now on the bus	
n − 7	7

B.

People now on the bus	
n	n + 7

C.

People now on the bus	
n	7

D.

People now on the bus	
n	n − 7

E.

People now on the bus	
7 − n	n

F.

People now on the bus	
n + 7	7

2. Isabella and Juan each have 12 books. Isabella gives Juan b books. Draw bar diagrams to show the number of books each person has now. Use pencil and paper. Draw a third bar diagram that shows how the number of books Isabella and Juan each have relates to their total number of books.

Which bar diagram models the number of books Isabella has now?

A.

12	
b	12 − b

B.

b	
12	b − 12

C.

b	
12	b + 12

D.

12	
b	12 ÷ b

Which bar diagram models the number of books Juan has now?

A.

b + 12	
b	12

B.

b	
12	b + 12

3. You go to the grocery store with $27. You spend m dollars at the store. Draw a bar diagram that shows the number of dollars you have left. Then write an algebraic expression for the number of dollars you have left.

Which bar diagram models the number of dollars you have left?

A.

27	
m	27 − m

B.

27 − m	
27	m

C.

27	
m	m + 27

D.

m	
27	m − 27

4. **Challenge** Marissa bought 8 notebooks. Her total cost was c. Each notebook was the same price. Draw a bar diagram representing the price of each notebook. Write an algebraic expression for the price of each notebook. Use pencil and paper. What would the bar diagram look like if Marissa bought n notebooks?

○A

c + 8							
c	c	c	c	c	c	c	c

○B.

8							
8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c	8 ÷ c

○C.

8c							
c	c	c	c	c	c	c	c

(○)D.

c							
c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8	c ÷ 8

An algebraic expression for the price of each notebook is C ÷ 8

5. The employees at a local business make 6,384 photocopies during a normal month. If daily use is steady, about how many copies do the employees make each day? (Hint: There are about 21 work days per month.) Let n be the number of copies made each day.

Which bar diagram and equation model the problem?

○A

21				
n	n	···	n	n
← 6,384 →				

n ÷ 21 = 6,384

○B.

6,384	
n	21

n + 21 = 6,384

○C.

n	
6,384	21

n − 6,384 = 21

(○)D

6,384				
n	n	···	n	n
← 21 →				

21n = 6,384

6384 ÷ 21

304

The employees make about 304 copies each day.

6. In a city, Building P is 407 feet taller than Building Q. The height of Building P is 972 feet. What is the height q of Building Q?

Which diagram and equation represent the problem?

(○)A

407
972
q

q + 407 = 972

q + 407 = 972

q − 407 = 972

+407 1407

379

○B.

972
407
q

q − 407 = 972

972
− 407
565

○C.

407
q
972

q + 972 = 407

What is the height q of Building Q? 565 feet