

Skip Counting



Quick Review

Look at the circled numbers in this multiplication chart.

You say these numbers when you start at 7 and count on by 7s.

These numbers are **multiples** of 7.

Multiplication Chart

X	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Try These

- Use the multiplication chart above.
 - Start at 3. List the multiples of 3. _____
 - Start at 6. List the multiples of 6. _____
 - Compare the numbers in the lists. What patterns do you see?

- List all the multiples of 2 to 20. _____
 - List all the multiples of 4 to 20. _____
 - Describe the numbers that are on both lists.

Practice

1. a) Use the hundred chart.
Colour all the numbers in which the ones digit and the tens digit add up to 9.
- b) What multiples have you coloured?

Hundred Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

2. Play this game with 2 or 3 friends.

You will need:

2 sets of cards numbered 2 to 10

3 counters for each player

A small container

- Take 3 counters each.
- Shuffle the cards and put them in a pile face down.
- Turn over the top card. This is the number you will start with.
- Go around the group. Say one number each, counting on by the number on the card.

The player who says 100 or a number over 100 puts a counter in the container.

The next player turns over a new card and starts the counting.

- The first person to get rid of all 3 counters wins.

Stretch Your Thinking

1. a) In the game above, which start numbers will result in a player saying 100?

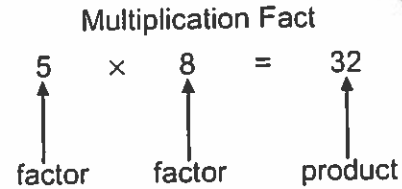
- b) Which start numbers will result in a player going over 100?

Multiplying by Numbers to 9



Quick Review

Multiply **factors** in a **multiplication fact** to get a **product**.



Here are some ways to help you remember multiplication facts.

Symmetry	Use the diagonal line from 0 to 81 on the multiplication chart. If $7 \times 8 = 56$, then $8 \times 7 = 56$
Facts with 0	The product is 0 when you multiply by 0. $0 \times 7 = 0$ $9 \times 0 = 0$
Facts with 1	When you multiply by 1, the product is the other factor. $1 \times 4 = 4$ $6 \times 1 = 6$
Facts with 9	<ul style="list-style-type: none"> The digits in the product always add up to 9. $2 \times 9 = 18$ ($1 + 8 = 9$) $3 \times 9 = 27$ ($2 + 7 = 9$) The number multiplied by 9 is always 1 more than the tens digit in the product. $6 \times 9 = 54$ (6 is 1 more than 5.)

Try These

1. Multiply.

- | | | |
|-------------------------|-------------------------|-------------------------|
| a) $9 \times 7 =$ _____ | b) $6 \times 4 =$ _____ | c) $7 \times 6 =$ _____ |
| d) $8 \times 5 =$ _____ | e) $0 \times 8 =$ _____ | f) $1 \times 9 =$ _____ |
| g) $8 \times 2 =$ _____ | h) $8 \times 9 =$ _____ | i) $6 \times 5 =$ _____ |
| j) $5 \times 7 =$ _____ | k) $6 \times 3 =$ _____ | l) $4 \times 8 =$ _____ |

Practice

1. Play this game with a partner.

You will need:

25 counters

2 calculators

paper and pencils

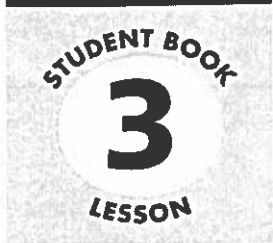
- Decide on a number from 2 to 9. This number will be the game factor.
- Player A: Place a counter on any number on the board and multiply by the game factor. Record the product as your score.
- Player B: Place a counter on a number adjacent to Player A's number. Multiply by the game factor and record your score.
- Continue playing. On each turn, place a counter next to the last one played. If an adjacent square is not empty, place the counter in any empty square.
- When the board is filled, the winner is the player with the highest total score.

When something is adjacent to something else, it is next to it.

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

Stretch Your Thinking

Suppose you are Player A. Where will you place the first counter? Explain.



Other Strategies for Multiplying



Quick Review

Use these strategies to multiply.

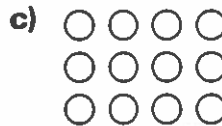
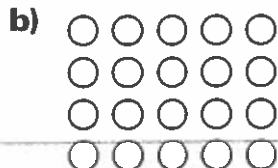
- Use **doubling** to multiply by 4.
Multiply by 2, then double.
To find 4×7 :
 $2 \times 7 = 14$
 $14 + 14 = 28$
So, $4 \times 7 = 28$

- Use **known facts** to multiply by 6.
To find 6×9 :
 $5 \times 9 = 45$
 $1 \times 9 = 9$
 $45 + 9 = 54$
So, $6 \times 9 = 54$

- Use **facts with 5 and 2** to multiply by 7.
To find 7×6 :
 $5 \times 6 = 30$
 $2 \times 6 = 12$
 $30 + 12 = 42$
So, $7 \times 6 = 42$

Try These

1. Write a multiplication fact for each array.



2. Make an array to find each product.

a) $7 \times 6 =$ _____

b) $8 \times 3 =$ _____

c) $3 \times 9 =$ _____

Practice

1. Name two facts that help you find each product.

a) 7×9 _____

b) 7×6 _____

c) 6×8 _____

d) 6×9 _____

e) 4×8 _____

f) 4×7 _____

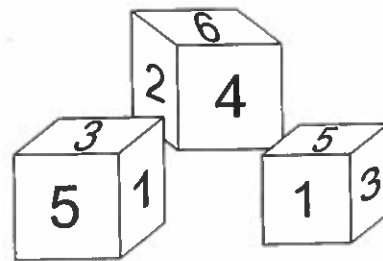
2. Show how you could find the product of 8×6 if you know the product of 8×5 .

3. Play this game with a partner.

You will need:

3 number cubes

2 calculators



- Take turns to roll all 3 number cubes.
Put the one with the greatest number aside.
If you roll more than one greatest number, put only one aside.
Roll the other 2 number cubes.
Put the one with the greater number aside.
Roll the last number cube.
- Add the numbers on your first 2 cubes.
Multiply the total by the number on your third cube.
The product is your score.
- Keep playing until one player reaches a total of 200.

Stretch Your Thinking

Show how you could use doubling to find the product of 13×4 .

Exploring Multiplication Patterns



Quick Review

- Use place value to multiply by 10, by 100, and by 1000.

You know $5 \times 1 = 5$.

So, 5×1 ten = 5 tens

5×1 hundred = 5 hundreds

5×1 thousand = 5 thousands

$$5 \times 10 = 50$$

$$5 \times 100 = 500$$

$$5 \times 1000 = 5000$$

- Use basic multiplication facts and place value to multiply by multiples of 10, 100, and 1000.

You know $3 \times 3 = 9$.

So, 3×3 tens = 9 tens

3×3 hundreds = 9 hundreds

3×3 thousands = 9 thousands

$$3 \times 30 = 90$$

$$3 \times 300 = 900$$

$$3 \times 3000 = 9000$$

Try These

Multiply. Use Base Ten Blocks when they help.

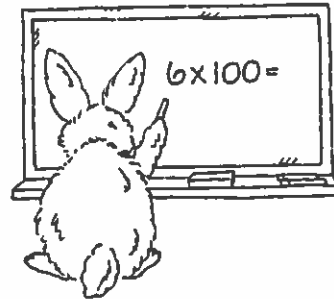
1. a) $6 \times 1 =$ _____ b) $8 \times 1 =$ _____ c) $9 \times 1 =$ _____
 $6 \times 10 =$ _____ $8 \times 10 =$ _____ $9 \times 10 =$ _____
 $6 \times 100 =$ _____ $8 \times 100 =$ _____ $9 \times 100 =$ _____
 $6 \times 1000 =$ _____ $8 \times 1000 =$ _____ $9 \times 1000 =$ _____
2. a) $3 \times 2 =$ _____ b) $5 \times 2 =$ _____ c) $4 \times 2 =$ _____
 $3 \times 20 =$ _____ $5 \times 20 =$ _____ $4 \times 20 =$ _____
 $3 \times 200 =$ _____ $5 \times 200 =$ _____ $4 \times 200 =$ _____
 $3 \times 2000 =$ _____ $5 \times 2000 =$ _____ $4 \times 2000 =$ _____

Practice

Find each product. Then fill in the boxes below with the letters that match the products. The words in the boxes will answer this riddle:

Why do rabbits make good mathematicians?

- | | | |
|----------------------------------|----------------------------------|----------------------------------|
| A $6 \times 100 =$ _____ | J $200 \times 5 =$ _____ | S $8 \times 20 =$ _____ |
| B $8 \times 10 =$ _____ | K $5 \times 100 =$ _____ | T $3 \times 80 =$ _____ |
| C $3 \times 50 =$ _____ | L $4 \times 30 =$ _____ | U $7 \times 50 =$ _____ |
| D $80 \times 7 =$ _____ | M $9 \times 10 =$ _____ | V $5 \times 1000 =$ _____ |
| E $6 \times 80 =$ _____ | N $2 \times 9 =$ _____ | W $7 \times 300 =$ _____ |
| F $3 \times 3000 =$ _____ | O $2 \times 1000 =$ _____ | X $8 \times 90 =$ _____ |
| G $6 \times 400 =$ _____ | P $6 \times 30 =$ _____ | Y $4 \times 200 =$ _____ |
| H $5 \times 60 =$ _____ | Q $7 \times 700 =$ _____ | Z $9 \times 50 =$ _____ |
| I $7 \times 100 =$ _____ | R $3 \times 1000 =$ _____ | |



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| 80 | 480 | 150 | 600 | 350 | 160 | 480 | 240 | 300 | 480 | 800 | |
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| 90 | 350 | 120 | 240 | 700 | 180 | 120 | 800 | | | | |

Stretch Your Thinking

There are 40 quarters in a roll.
How many quarters are there in 10 rolls?

Estimating Products



Quick Review

Estimate to solve multiplication problems.

- A basket holds 23 apples.

About how many apples do 5 baskets hold?

Think: 23 is close to 20.
Round down to 20.

To estimate 5×23

$$5 \times 20 = 100$$

There are about 100 apples
in 5 baskets.



- A bucket holds 28 tennis balls.

About how many tennis balls do 7 buckets hold?

Think: 28 is close to 30.
Round up to 30.

To estimate 7×28

$$7 \times 30 = 210$$

There are about 210 tennis balls
in 7 buckets.

Try These

1. Estimate each product.

a) 4×29

Estimate: _____

b) 6×52

Estimate: _____

c) 5×81

Estimate: _____

2. There are 48 crayons in a box.

About how many crayons are there in 8 boxes? _____

3. There are 9 chairs in each row.

About how many chairs are there in 18 rows? _____

4. Kara bought 27 packs of stickers. There are 8 stickers in each pack.

About how many stickers does Kara have? _____

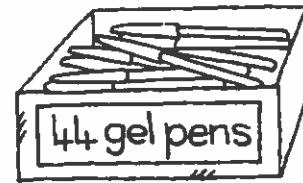
Practice

1. Estimate each product.

- a) 6×78 _____ b) 4×93 _____ c) 9×42 _____
d) 5×69 _____ e) 7×21 _____ f) 52×7 _____
g) 38×8 _____ h) 47×6 _____ i) 84×5 _____

2. About how many gel pens would you have if you bought:

- a) 3 boxes? _____ b) 7 boxes? _____
c) 5 boxes? _____ d) 8 boxes? _____



3. Bertha types 58 words a minute.
About how many words can she type in:

- a) 5 minutes? _____
b) 8 minutes? _____
c) 30 minutes? _____

4. Estimate how many treats you would get from:

- a) 6 piñatas _____
b) 4 piñatas _____
c) 9 piñatas _____



Stretch Your Thinking

Jack collects superhero trading cards.
He has 5 collections with 22 cards each and 7 collections with 27 cards each.
About how many cards does Jack have altogether?

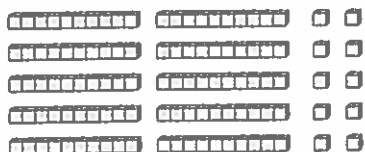
Strategies for Multiplication



Quick Review

Here are three ways to find the product of 5×22 .

- Use Base Ten Blocks. Arrange 5 groups of 22.

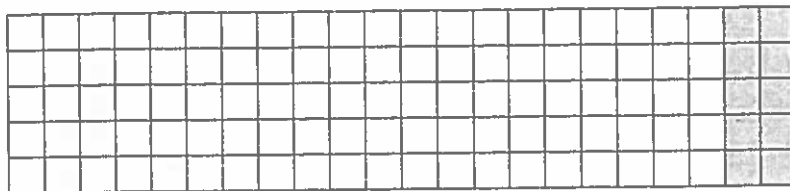


Multiply the tens. $5 \times 20 = 100$

Multiply the ones. $5 \times 2 = 10$

Add. $100 + 10 = 110$

- Show an array on grid paper.



5 rows of 20 = 100

5 rows of 2 = 10

Add. $100 + 10 = 110$

- Break a number apart.

$$\begin{array}{r} 22 \\ \times 5 \\ \hline \end{array}$$

Multiply the ones: $5 \times 2 \rightarrow 10$

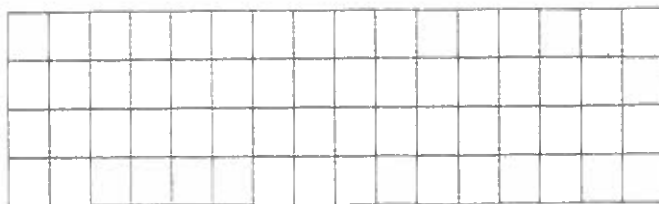
Multiply the tens: $5 \times 20 \rightarrow \underline{100}$

Add. 110

Try These

Write a multiplication sentence.

1. a)



Practice

1. Multiply.

a) $\begin{array}{r} 32 \\ \times 4 \\ \hline \end{array}$

b) $\begin{array}{r} 42 \\ \times 4 \\ \hline \end{array}$

c) $\begin{array}{r} 84 \\ \times 2 \\ \hline \end{array}$

d) $\begin{array}{r} 71 \\ \times 8 \\ \hline \end{array}$

e) $\begin{array}{r} 65 \\ \times 3 \\ \hline \end{array}$

f) $\begin{array}{r} 56 \\ \times 3 \\ \hline \end{array}$

g) $\begin{array}{r} 19 \\ \times 5 \\ \hline \end{array}$

h) $\begin{array}{r} 57 \\ \times 6 \\ \hline \end{array}$

i) $\begin{array}{r} 48 \\ \times 4 \\ \hline \end{array}$

j) $\begin{array}{r} 56 \\ \times 9 \\ \hline \end{array}$

2. Play this game with a partner.

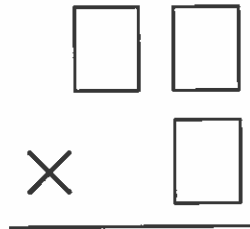
You will need:

10 small pieces of paper with one of these numbers written on each piece: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

A small paper bag

Paper and pencil

- Draw a game space like this on your paper.
- Put the numbered pieces of paper in a bag.
- Pull out 3 numbered pieces each.
- Record each digit in one of the boxes in your game space.
- Find your products.
- The player with the greater product wins a point.
- Play 5 rounds.
- Then, change the rules to make a new game. Record your digits in the boxes of your partner's game space. Play 5 more rounds.



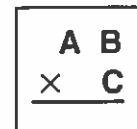
Stretch Your Thinking

The box to the right represents the game you just played.

The digit boxes are represented by A, B, and C.

Which digit box is the best place to write your highest number?

Explain.



Dividing by Numbers from 1 to 7

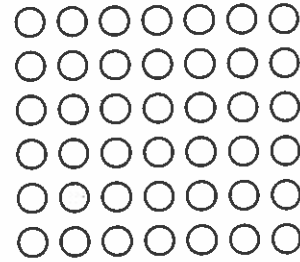


Quick Review

There are 42 students who want to play hockey.
 There are 6 players on a team.
 How many teams can there be?

To find out, divide: $42 \div 6$
 Here are two ways to find $42 \div 6$:

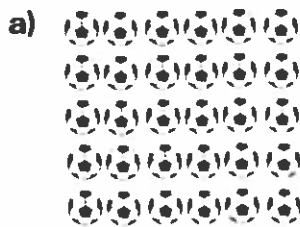
- Make an array of 42 counters with 6 counters in each row.
 There are 7 rows.
 So: $42 \div 6 = 7$
 There can be 7 teams.
- You can think about multiplication to divide.
 Every division fact has a related multiplication fact.



6 times which number is 42?
 You know $6 \times 7 = 42$
 So, $42 \div 6 = 7$

Try These

1. Write a multiplication fact and a division fact for each array.



2. Use a related multiplication fact to help you divide. Write the related fact.

- a) $20 \div 4 =$ _____ b) $30 \div 5 =$ _____ c) $14 \div 7 =$ _____

Practice

1. Divide. Draw a picture to show your work.

$24 \div 3 = \underline{\quad}$	$30 \div 5 = \underline{\quad}$
$18 \div 2 = \underline{\quad}$	$5 \div 5 = \underline{\quad}$

2. Use a related multiplication fact to divide.

- a) $18 \div 6 = \underline{\quad}$ b) $45 \div 5 = \underline{\quad}$ c) $56 \div 7 = \underline{\quad}$ d) $35 \div 5 = \underline{\quad}$
e) $24 \div 4 = \underline{\quad}$ f) $27 \div 3 = \underline{\quad}$ g) $12 \div 2 = \underline{\quad}$ h) $9 \div 1 = \underline{\quad}$

3. Write a division fact to solve each question.

- a) 24 children
6 on a team
How many teams?

- b) 18 cookies
9 on a plate
How many plates?

- c) 42 cans
7 in each row
How many rows?

Stretch Your Thinking

Find all the ways of dividing 36 students into equal teams.
Write a division fact to show each way.

Dividing by Numbers from 1 to 9



Quick Review

Here's how to divide by 8 and 9.

$$48 \div 8$$

$$8 \times \square = 48$$

$$8 \times 6 = 48$$

So, $48 \div 8 = 6$

Also, $48 \div 6 = 8$



Related Facts

$$48 \div 8 = 6$$

$$48 \div 6 = 8$$

$$6 \times 8 = 48$$

$$8 \times 6 = 48$$

$$63 \div 9$$

$$9 \times \square = 63$$

$$9 \times 7 = 63$$

So, $63 \div 9 = 7$

Also, $63 \div 7 = 9$



Related Facts

$$63 \div 9 = 7$$

$$63 \div 7 = 9$$

$$7 \times 9 = 63$$

$$9 \times 7 = 63$$

Try These

1. Write two multiplication facts and two division facts for each array.

a) _____

b) _____

2. Divide.

a) $27 \div 9 =$ _____ b) $16 \div 8 =$ _____

c) $45 \div 9 =$ _____ d) $64 \div 8 =$ _____

e) $36 \div 9 =$ _____ f) $32 \div 8 =$ _____

Practice

1. Find the product. Then write a related multiplication fact and two related division facts.

a) $3 \times 9 =$ _____

b) $8 \times 5 =$ _____

c) $9 \times 7 =$ _____

2. Divide.

a) $49 \div 7 =$ _____

b) $81 \div 9 =$ _____

c) $45 \div 5 =$ _____

d) $27 \div 3 =$ _____

e) $56 \div 8 =$ _____

f) $36 \div 6 =$ _____

3. Write a division sentence to show each answer.

a) There are 28 days in February. How many weeks is that?

b) There are 3 tennis balls in a carton.
How many cartons are needed for 27 balls?

c) There are 54 students in the band. They march in 6 equal rows.
How many students are in each row?

d) There are 9 kiwi fruit in a small basket.
A box contains 72 kiwi fruit in a single layer.
How many small baskets of kiwi fruit can be made from a box?

Stretch Your Thinking

Complete this division sentence in as many ways as you can. $\square \div \square = 8$

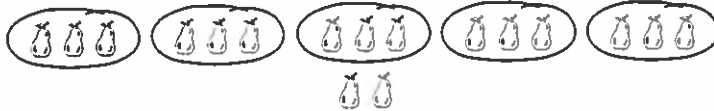
Division with Remainders



Quick Review

- Here's how to share 17 pears equally among 5 boxes.

Divide: $17 \div 5$



Put 3 pears in each box.
 There are 2 pears left over.
 Write $17 \div 5 = 3 \text{ R}2$.
 This is a division sentence.
 The R stands for remainder.

Say 17 divided by 5
 is 3 remainder 2.

- Here's how to decide how many tables are needed for 32 students eating in the lunchroom. Six students can fit at each table.

Divide: $32 \div 6$

Think about the division fact that is closest to $32 \div 6$.

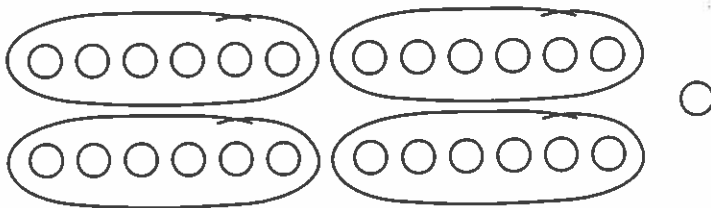
You know that $30 \div 6 = 5$. So, $32 \div 6 = 5 \text{ R}2$

But if 5 tables are used, then 2 students cannot sit at a table.

So, 6 tables are needed.

Try These

- Write a division sentence for this picture.



- Divide.

a) $15 \div 6 =$ _____

b) $27 \div 5 =$ _____

c) $31 \div 4 =$ _____

d) $19 \div 6 =$ _____

e) $17 \div 4 =$ _____

f) $37 \div 8 =$ _____

Practice

1. Play this game with a partner.

You will need:

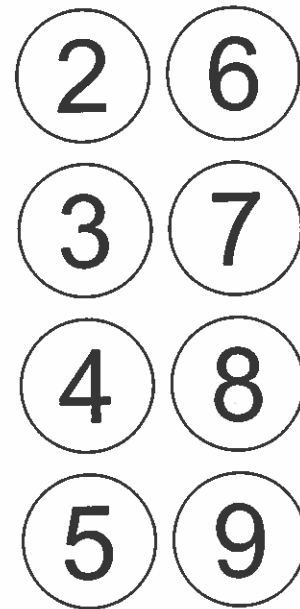
Counters of two colours

Number cubes: one labelled 1, 1, 2, 2, 3, 3 and one labelled 4, 4, 5, 5, 6, 6

Take turns:

- Roll the number cubes to make a 2-digit number.
(For example, with 6 and 3, you can make 63 or 36.)
 - Place a counter on a circled number.
Divide your 2-digit number by the number in your circle.
 - Place a counter on a square containing your remainder if you can.
 - Remove your counter from the circle.
- Continue playing until all the squares are covered.

7	5	2	4	1
6	3	6	8	6
1	5	0	3	0
2	4	8	7	2
0	5	3	1	4



Stretch Your Thinking

1. Write a division sentence with remainder 8.

2. Write a division sentence with remainder 4.

Another Strategy for Division



Quick Review

Divide: $55 \div 2$

Arrange the 5 rods in 2 equal rows.



One ten rod and 5 ones remain.

Trade the ten rod for 10 ones.



Now you have 15 unit cubes.

Share the 15 cubes equally among the 2 groups.



So, $55 \div 2 = 27 R1$

You write:

$$\begin{array}{r} 2 \overline{)55} \\ \underline{2} \\ 3 \\ \underline{2} \\ 1 \end{array}$$

$$\begin{array}{r} 2 \overline{)55} \\ \underline{27} \\ 1 \end{array}$$

This is called **short division**.

Try These

1. Divide. Use Base Ten Blocks when they help.

a) $25 \div 8 =$ _____ b) $42 \div 5 =$ _____ c) $59 \div 7 =$ _____

d) $29 \div 4 =$ _____ e) $37 \div 9 =$ _____ f) $34 \div 6 =$ _____

2. Luis divided 43 marbles equally among his 6 friends. How many marbles did each friend get? Did Luis have any marbles left? Write a division sentence to show how you got the answer.