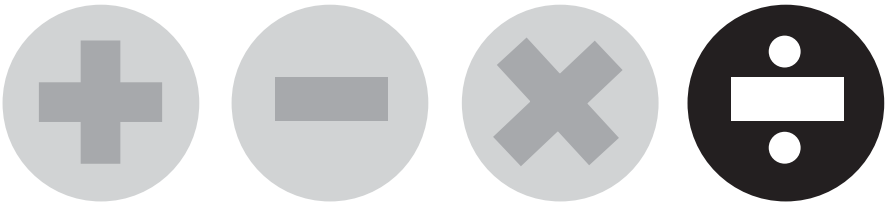
THINKING STRATEGIES: DIVISION

BUILDING MASTERY OF DIVISION FACTS



CELIA BARON

PORTAGE & MAIN PRESS

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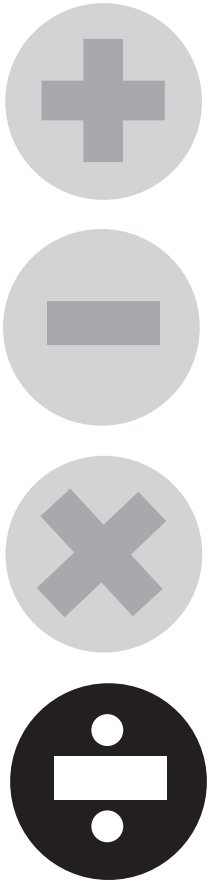

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LESSON 1G: COOL LOOPS WITH 2

TEACHER LESSON

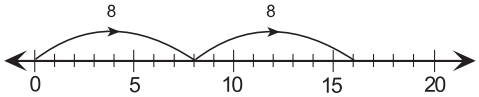
Practicing Multiplication Facts

Present multiplication facts with a factor of 2 to the students. Have students complete the facts and explain their thinking strategies.

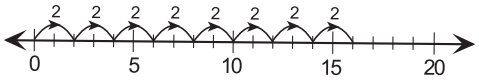
Interpreting the Operation of Division

Present the division fact 16 ÷ 8 to the students. Have them explain what the fact means to them. Have students model the fact and complete it.

Interpretation #1: Separate 16 into as many groups of 8 as possible. Since 8 + 8 = 16, 16 can be divided into 2 groups of 8. This interpretation can be modelled with the following number line:



Interpretation #2: Share 16 equally among 8 groups. In this interpretation, the size of each group is 2. This interpretation can be modelled with the following number line.



Practicing the Think-Multiplication Strategy

The primary strategy for completing a division fact is the think-multiplication strategy. Have the students complete the fact 16 ÷ 8 using the think-multiplication strategy.

16 ÷ 8

- Think-Multiplication:
  What times 8 makes 16?
  2 x 8 = 16
  SO, 16 ÷ 8 = 2

Introducing the Addition Double Strategy for a Quotient of 2

Another thinking strategy for division facts with a quotient of 2 is the *addition double strategy.* Again, have the students consider the division fact 16 ÷ 8.

Using interpretation #1, separate 16 into as many groups of 8 as possible. Since 8 + 8 = 16, 2 groups of 8 are possible. Remind students that the fact 8 + 8 is called a *double fact.*

16 ÷ 8

- Addition Double:
  8 + 8 = 16
  2 x 8 = 16
  SO, 16 ÷ 8 = 2

Note: When students skip-count by 8 (8, 16), they reach 16 on the second count.

Naming Division Facts with a Quotient of 2

Have students name division facts with a quotient of 2. They include the following facts:

2 ÷ 1 = 2
4 ÷ 2 = 2
6 ÷ 3 = 2
8 ÷ 4 = 2
10 ÷ 5 = 2
12 ÷ 6 = 2
14 ÷ 7 = 2
16 ÷ 8 = 2
18 ÷ 9 = 2
20 ÷ 10 = 2

Encouraging Class Discussion

Engaging students in whole-class discussions is an integral part of the program. Prompts for encouraging class discussions can be found on page 2 of the Introduction.

INTRODUCING THE STUDENT ACTIVITY SHEET

Distribute a copy of the sheet, Cool Loops, to each student. Read the instructions aloud as a class, and have the students complete the activity.

Note: The loops form a pattern that students can use to check their work.

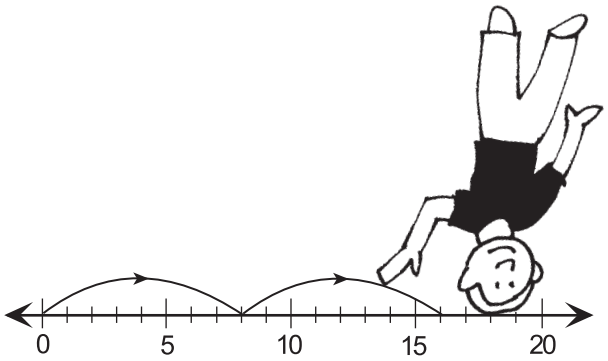
POWER FACTS

Now that the students have developed the thinking strategies for division facts that have either a divisor or a quotient of 2, hand out the Power Facts for Level 1 (page 156) and the letter for parents/guardians (page 171) for students to take home. Have students practice the first set of Power Facts at least once a day. Students can practice in class or at home.

PARTNER BINGO

Students can practice the division facts with either a divisor or a quotient of 2 by playing Partner Bingo, Level 1 (pages 174-175). Have the students complete the facts in order and cross out only one square on their card for each fact. Partner Bingo can be played in class or at home.

Cool Loops



Below, circle each pair of numbers that has a quotient of 2. The numbers must be beside each other horizontally, vertically, or diagonally. When you are finished, solve the problems at the bottom of the page.

16	10	5	14	7	6
2	8	12	18	3	4
1	6	14	2	9	2
8	6	1	7	16	12
4	14	3	8	10	6
7	20	10	18	9	5

Name ten division facts with a quotient of 2.

Explain your thinking strategy for completing the fact 16 ÷ 8.

SELF-ASSESSMENT PROGRESS REPORT FOR STUDENTS • FACTS WITH 2

Complete each fact, and explain your thinking strategy. Place a check mark beside each fact you have mastered.

☐ 12 ÷ 2 =

☐ 10 ÷ 5 =

☐ 16 ÷ 2 =

☐ 8 ÷ 4 =

☐ 4 ÷ 2 =

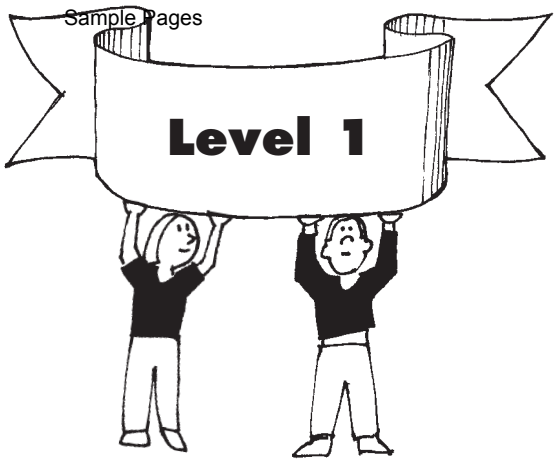
☐ 20 ÷ 2 =

☐ 6 ÷ 3 =

☐ 18 ÷ 2 =

☐ 2 ÷ 1 =

☐ 14 ÷ 2 =



PARTNER BINGO 1

Find a partner.

Partner #1: Complete the first fact beside your card. On your card, find a square that matches the quotient of the first fact, and shade it in.

Partner #2: Complete the first fact beside your card. On your card, find a square that matches the quotient of the first fact, and shade it in.

Take turns completing the facts in order and shading in a square on your card. The first one to fill in a row, column, or diagonal wins the game.

Partner #1

① 16 ÷ 2 = _____
② 10 ÷ 2 = _____
③ 18 ÷ 2 = _____
④ 14 ÷ 2 = _____
⑤ 2 ÷ 2 = _____
⑥ 12 ÷ 6 = _____
⑦ 16 ÷ 2 = _____
⑧ 8 ÷ 2 = _____
⑨ 14 ÷ 2 = _____
⑩ 16 ÷ 8 = _____
⑪ 2 ÷ 2 = _____
⑫ 8 ÷ 4 = _____
⑬ 10 ÷ 2 = _____
⑭ 18 ÷ 2 = _____
⑮ 4 ÷ 2 = _____
⑯ 12 ÷ 2 = _____

Partner #1

1	3	7	2	3
5	2	9	6	5
1	10	÷	7	1
9	8	4	3	4
3	2	10	8	2

Partner #2

① 12 ÷ 2 = _____
② 6 ÷ 2 = _____
③ 20 ÷ 2 = _____
④ 10 ÷ 5 = _____
⑤ 16 ÷ 2 = _____
⑥ 8 ÷ 2 = _____
⑦ 18 ÷ 9 = _____
⑧ 14 ÷ 2 = _____
⑨ 16 ÷ 2 = _____
⑩ 6 ÷ 3 = _____
⑪ 8 ÷ 2 = _____
⑫ 12 ÷ 2 = _____
⑬ 14 ÷ 7 = _____
⑭ 6 ÷ 2 = _____
⑮ 20 ÷ 2 = _____
⑯ 18 ÷ 2 = _____

Partner #2

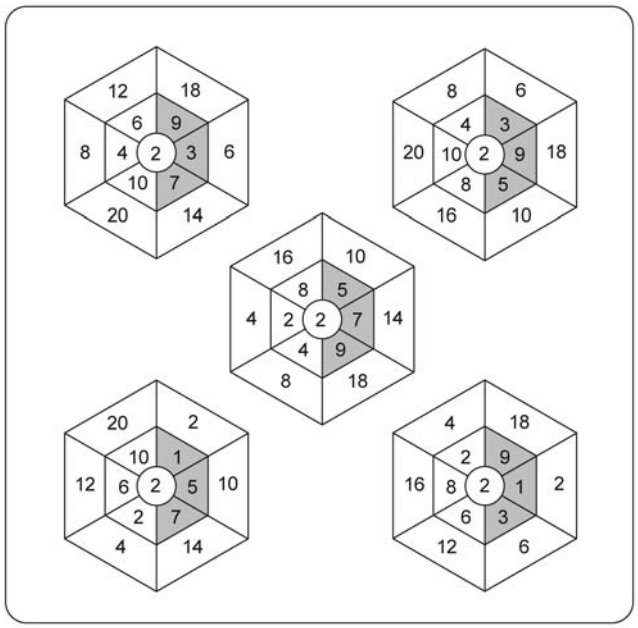
10	2	1	2	10
3	5	7	1	9
5	10	÷	4	3
6	1	2	6	8
9	2	8	4	5

Sample Pages

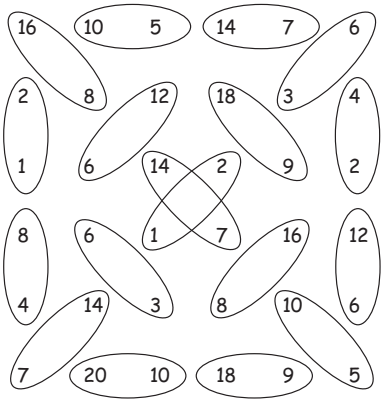
Division Fact	Think-Multiplication	Picture	Multiplication Sentence	Division Sentence
10 ÷ 2	2 times what makes 10?	*Pictures will vary.*	2 x 5 = 10	10 ÷ 2 = 5
14 ÷ 2	2 times what makes 14?	*Pictures will vary.*	2 x 7 = 14	14 ÷ 2 = 7
20 ÷ 2	2 times what makes 20?	*Pictures will vary.*	2 x 10 = 20	20 ÷ 2 = 10
18 ÷ 2	2 times what makes 18?	*Pictures will vary.*	2 x 9 = 18	18 ÷ 2 = 9

Explain how you can use a think-multiplication strategy to complete the division fact 12 ÷ 2.
You can think 2 times what makes 12. Since 2 x 6 = 12, 12 ÷ 2 = 6.

Lesson 1E, page 19

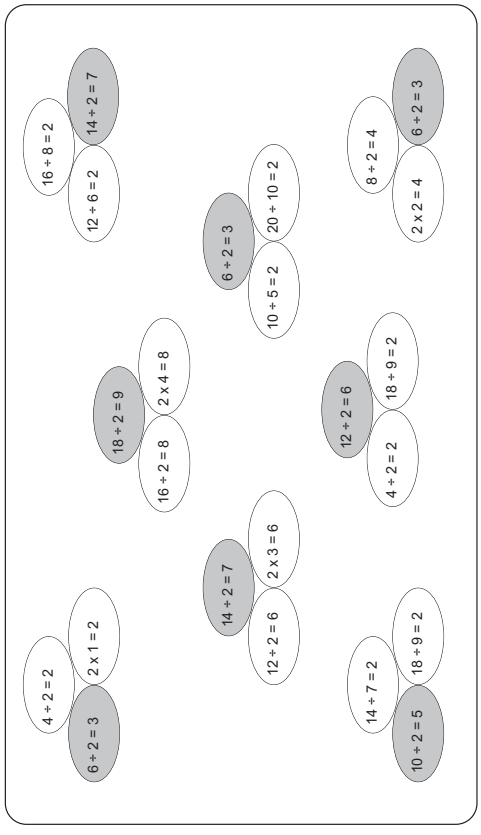


Lesson 1F, page 21



Name ten division facts with a quotient of 2.
2 ÷ 1 = 2 4 ÷ 2 = 2 6 ÷ 3 = 2 8 ÷ 4 = 2 10 ÷ 5 = 2
12 ÷ 6 = 2 14 ÷ 7 = 2 16 ÷ 8 = 2 18 ÷ 9 = 2 20 ÷ 10 = 2
Explain your thinking strategy for completing the fact 16 ÷ 8.
Explanations will vary.

Lesson 1G, page 23



Lesson 1H, page 25