Lesson 6-2

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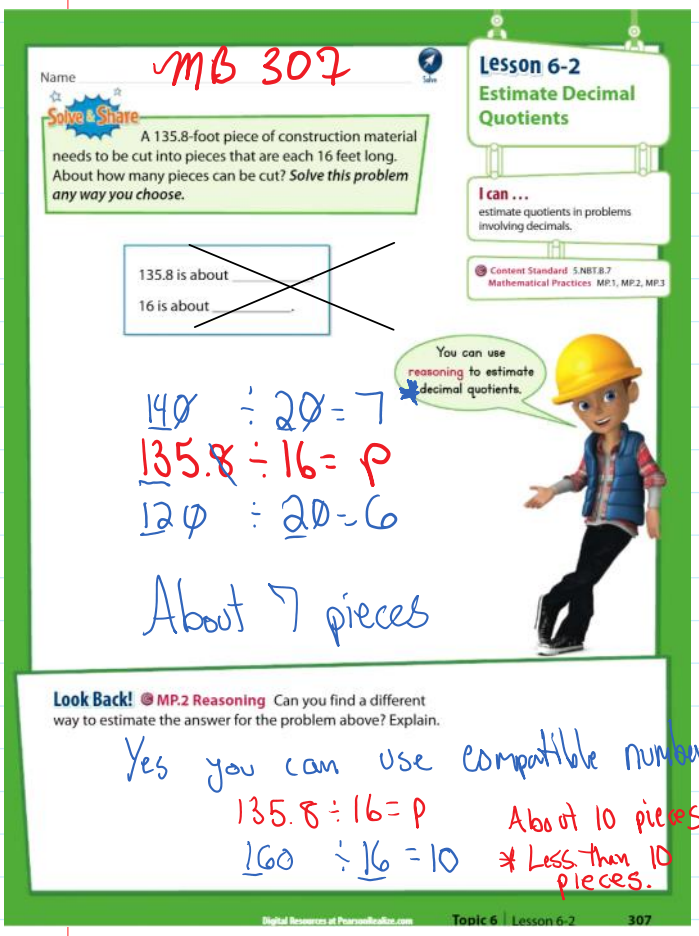

MB 307

Name

Lesson 6-2
Estimate Decimal Quotients

Solve & Share
A 135.8-foot piece of construction material needs to be cut into pieces that are each 16 feet long. About how many pieces can be cut? *Solve this problem any way you choose.*

135.8 is about _____.
16 is about _____.

I can ...
estimate quotients in problems involving decimals.

Content Standard 5.NBT.B.7
Mathematical Practices MP.1, MP.2, MP.3

You can use reasoning to estimate decimal quotients.

140 ÷ 20 = 7
135.8 ÷ 16 = p
120 ÷ 20 = 6

About 7 pieces

Look Back! MP.2 Reasoning Can you find a different way to estimate the answer for the problem above? Explain.

Yes you can use compatible numbers.
135.8 ÷ 16 = p
160 ÷ 16 = 10
About 10 pieces
* Less than 10 pieces.

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When the divisor is greater than 1 the quotient is smaller than the dividend.

When the divisor is equal to 1, the quotient is the same as the dividend.

When the divisor is less than 1, the quotient is greater than the dividend.

How Can You Use Estimation to Find Quotients?

Diego purchased a video gaming system for $473.89 (including tax). About how much are his monthly payments if he wants to pay this off in one year?

One Way

Estimate $473.89 ÷ 12. Use rounding.

Round to the nearest ten:
473.89 rounds to 470;
12 rounds to 10.

$473.89 ÷ 12 is about
$470 ÷ 10 = $47.

Each monthly payment will be about $47.

Another Way

Estimate $473.89 ÷ 12.
Use compatible numbers.

Look for compatible numbers.

$473.89 ÷ 12 is close to
$480 ÷ 12 = $40.

You know 48 ÷ 12 = 4.

Each monthly payment will be about $40.

500 ÷ 10 = 50

$473.89 ÷ 12

400 ÷ 10 = 40

470. ÷ 10 = 47

Convince Me! MP.3 Construct Arguments In the example above, which estimate is closer to the exact answer? Tell how you decided.

The estimate where the dividend is closest to the original dividend usually has the closer estimate. 480 ÷ 12 = 40

Name _____

Guided Practice

Do You Understand?

1. **Number Sense** Leo is estimating 53.1 ÷ 8.4. Do you think he should use 53 ÷ 8 or 54 ÷ 9 to estimate? Why?

54 ÷ 9 is the math fact!

2. MP.3 Construct Arguments Is each quotient greater than or less than 1? How do you know?

A 0.2 ÷ 4 — Less than. Divisor is greater than the dividend.

B 1.35 ÷ 0.6 — Greater than. Dividend is greater than the divisor.

Do You Know How?

In **3–8**, estimate each quotient. Use rounding or compatible numbers.

3. 42 ÷ 6.8

4. 102 ÷ 9.6

CN: 100 ÷ 10 = 10

5. 48.9 ÷ 4

80 ÷ 4 = 20
40 ÷ 4 = 10

6. 72.59 ÷ 7

7. 15.4 ÷ 1.9

8. 44.07 ÷ 6.3

48 ÷ 6 = 8
42 ÷ 6 = 7

Complete 14, 18, 27, 28

Independent Practice

Leveled Practice In **9** and **10**, complete the work to estimate each quotient.

9. Estimate 64.5 ÷ 12.3 using rounding.

65 ÷ 10 = ____

10. Estimate 64.5 ÷ 12.3 using compatible numbers.

60 ÷ 12 = ____

In **11–19**, estimate each quotient.

11. 7 ÷ 0.85

12. 9.81 ÷ 0.91

13. 17.7 ÷ 3.2

14. 91.02 ÷ 4.9

15. 45.64 ÷ 6.87

16. 821.22 ÷ 79.4

17. 22.5 ÷ 5

18. 15.66 ÷ 9.3

19. 156.3 ÷ 14.5

*For another example, see Set B on page 357.

Math Practices and Problem Solving

20. Luci's mother gave her $7.50 to buy 8 spiral notebooks. With tax, the cost of each notebook is $1.05. Does Luci have enough money? Use compatible numbers and estimation to help you decide.

21. **MP.3 Critique Reasoning** Kerri said that the quotient of 4.2 ÷ 5 is about 8 tenths. She reasoned that 4.2 ÷ 5 is close to 40 tenths ÷ 5. Do you agree with Kerri's reasoning? Explain.

22. **Higher Order Thinking** Write a decimal division problem that has an estimated quotient of 4. Explain how to get that estimate.

23. **MP.2 Reasoning** Lei's car averages 14.5 miles per gallon while Roman's car averages 28.5 miles per gallon. Use estimation to find how many times as many miles per gallon Roman's car gets compared to Lei's car.

In **24–26**, use the table.

DATA

Sample	Mass	Temperature
1	0.98 g	37.57°C
2	0.58 g	57.37°C
3	0.058 g	75.50°C
4	0.098 g	73.57°C

24. **Math and Science** Which sample from the experiment had the least mass? Which had the lowest temperature?

25. Sample 3 was used in another experiment. A temperature of 82.14°C was recorded. How many degrees did the temperature change?

26. What is the difference in mass between Sample 1 and Sample 2?

Common Core Assessment

27. Mauricio scored a total of 34.42 points in five gymnastic events. Which number sentence shows the best way to estimate Mauricio's score for each event?

Ⓐ 35 ÷ 5 = 7
Ⓑ 35 ÷ 7 = 5
Ⓒ 30 ÷ 10 = 3
Ⓓ 40 ÷ 10 = 4

28. Terry paid $117.50 for 18 identical flash drives. Which is the best estimate for the cost of each flash drive?

Ⓐ $6
Ⓑ $10
Ⓒ $12
Ⓓ $60