3 Develop the Concept: Visual

ELL STRATEGY Visual Learning

Visual Learning

Estimating Products

How can you estimate products?

A store needs to take in at least $15,000 in sales per month to make a profit. If the store is open every day in March and takes in an average of $525 per day, will the store make a profit in March?

What information from the calendar do you need to solve the problem? [You need to know that there are 31 days in March.]

1 Visual Learning

Set the Purpose Call students' attention to the **Visual Learning Bridge** at the top of the page. *In this lesson, you will learn to estimate products.*

Animated Glossary Students can see highlighted words defined in the Online Student Edition.
underestimate, overestimate
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Another Example

This example shows how to estimate the product of 24 and 39 using compatible numbers. *Why was 39 changed to 40?* [39 is close to 40; 40 is a multiple of 10 and is a compatible number.] *Why was 24 changed to 25?* [24 is close to 25, and it is an easy number to use for mental math.] *1,000 is an overestimate for 24 × 39. How could you change the estimate to an underestimate?* [Change the compatible numbers to 20 and 40 and then multiply.]

2 Guided Practice

Formative Assessment

Remind students that when estimating, they should use numbers that they can multiply by using mental math.

Exercise 3
Error Intervention

If students don't notice that they can use the Associative Property to multiply 27 by 4 before multiplying by 43,

then ask: *In Exercise 3, which property can you use to change the order of the multiplication?* [The Commutative Property; 27 × 4 × 43] *Why would changing the order make Exercise 3 easier to use compatible numbers?* [27 is close to 25, and 25 and 4 are compatible numbers and are easy to multiply mentally.]

Reteaching For another example and more practice, assign **Reteaching** Set C on p. 80.

A

Lesson 3-3

Understand It! There is more than one way to estimate products of whole numbers.

Estimating Products

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Another Example How can you use compatible numbers to estimate products?

Estimate 24 × 39.

You can also use compatible numbers to estimate products.

It is easy to find 25 × 40, since 25 and 40 are compatible numbers. Remember that 25 × 4 = 100. So, 25 × 40 = 1,000, and 1,000 is a good estimate for 24 × 39.

Both numbers used to estimate were greater than the actual numbers. So, 1,000 is an overestimate.

Guided Practice*

Do you know HOW?

In **1** and **2**, estimate by using rounding. Tell if your estimate is an overestimate or underestimate.
Sample answers are given.
1. 58 × 6 — 360; overestimate
2. 733 × 21 — 14,000; underestimate

In **3** and **4**, estimate by using compatible numbers. Tell if your estimate is an overestimate or underestimate.
Sample answers are given.
3. 43 × 27 × 4 — 4300; underestimate
4. 38 × 69 — 2800; overestimate

Do you UNDERSTAND?

5. **Writing to Explain** Susan used rounding to estimate 243 × 4 and found 200 × 4. Jeremy used compatible numbers and found 250 × 4. The actual product is 972. Whose method gives an estimate closer to the actual product? Jeremy; 250 × 4 = 1,000
6. **Reasonableness** In the example above, why is it better to adjust $525 to 500 rather than leave the number at 525? Adjusting $525 to 500 is easier to multiply and gives an underestimate.

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