1. Circle each expression that is not equivalent to the expression in **bold.**

14×31

I think of this as 14 units of thirty-one.
It's like counting by 31's: $31, 62, 93, 124, \ldots, 434$.

14 thirty-ones

31 fourteens

The commutative property says $14 \times 31 = 31 \times 14$, or
14 thirty-ones $=$ 31 fourteens.

$(13 - 1) \times 31$

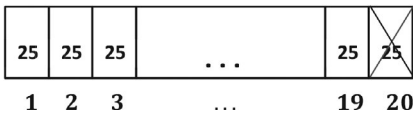
This would be equivalent if it were $13 + 1$ instead.

$(10 \times 31) - (4 \times 31)$

I think of this as 10 thirty-ones minus 4 thirty-ones. This expression is equal to 6 thirty-ones not 14 thirty-ones.

2. Solve using mental math. Draw a strip diagram and fill in the blanks to show your thinking.

a. $19 \times 25 =$ **19** twenty-fives

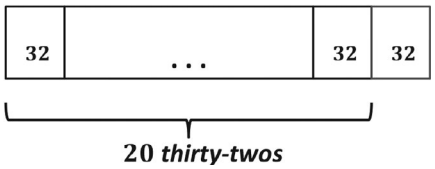


Think: 20 twenty-fives $-$ 1 twenty-five

$= ($ **20** $\times 25) - ($ **1** $\times 25)$

$=$ **500** $-$ **25** $=$ **475**

b. $21 \times 32 =$ **21** thirty-twos



Think: **20** thirty-twos $+$ **1** thirty-two

$= ($ **20** $\times 32) + ($ **1** $\times 32)$

$=$ **640** $+$ **32** $=$ **672**

3. The pet store has 99 fish tanks with 44 fish in each tank. How many fish does the pet store have? Use mental math to solve. Explain your thinking.

   I need to find 99 forty-fours.

   I know that 99 forty-fours is 1 unit of forty-four less than 100 forty-fours.

   I multiplied 100×44, which is $4,400$.

   I need to subtract one group of 44.

   $4,400 - 44$. The pet store has $4,356$ fish.

Name _____ Date _____

1. Circle each expression that is not equivalent to the expression in **bold.**

   a. **37 × 19**

   37 nineteens | (30 × 19) − (7 × 29) | 37 × (20 − 1) | (40 − 2) × 19

   b. **26 × 35**

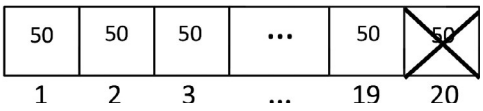
   35 twenty-sixes | (26 + 30) × (26 + 5) | (26 × 30) + (26 × 5) | 35 × (20 + 60)

   c. **34 × 89**

   34 × (80 + 9) | (34 × 8) + (34 × 9) | 34 × (90 − 1) | 89 thirty-fours

2. Solve using mental math. Draw a strip diagram and fill in the blanks to show your thinking. The first one is partially done for you.

a. 19 × 50 = _____ fifties



Think: 20 fifties − 1 fifty

= (_____ × 50) − (_____ × 50)

= _____ − _____

= _____

b. 11 × 26 = _____ twenty-sixes

Think: _____ twenty-sixes + _____ twenty-six

= (_____ × 26) + (_____ × 26)

= _____ + _____

= _____

c. 49 × 12 = _____ twelves

Think: _____ twelves − 1 twelve

= (_____ × 12) − (_____ × 12)

= _____ − _____

= _____

d. 12 × 25 = _____ twenty-fives

Think: _____ twenty-fives + _____ twenty-fives

= (_____ × 25) + (_____ × 25)

= _____ + _____

= _____

3. Define the unit in word form and complete the sequence of problems as was done in the lesson.

a. 29 × 12 = 29 _____

Think: 30 _____ − 1 _____

= (30 × _____) − (1 × _____)

= _____ − _____

= _____

b. 11 × 31 = 31 _____

Think: 30 _____ + 1 _____

= (30 × _____) + (1 × _____)

= _____ + _____

= _____

c. 19 × 11 = 19 _____ Think: 20 _____ − 1 _____ = (20 × _____) − (1 × _____) = _____ − _____ = _____	d. 50 × 13 = 13 _____ Think: 10 _____ + 3 _____ = (10 × _____) + (3 × _____) = _____ + _____ = _____

4. How can 12 × 50 help you find 12 × 49?

5. Solve mentally.

   a. 16 × 99 = _____

   b. 20 × 101 = _____

6. Joy is helping her father to build a rectangular deck that measures 14 ft by 19 ft. Find the area of the deck using a mental strategy. Explain your thinking.

7. The Longhorn School turns 101 years old in June. In order to celebrate, they ask each of the 23 classes to collect 101 items and make a collage. How many total items will be in the collage? Use mental math to solve. Explain your thinking.