*Week 3: Patterns and Multiples of 10*

**TPS Parent(s)/Guardian(s):** Included below is a multiplication grid. Please have your child fill in their multiplication facts. They can use the multiplication grid in the last packet to check their work. Also, in an effort to provide support, there are work examples embedded in some activities within this packet. Lastly, here are four helpful definitions:

*Product:* answer to a multiplication problem
*Model:* a mathematical visual, drawing, diagram that helps to show and explain your thinking
*Base ten blocks:* math tools used to represent place value of numbers, see example in 'Multiples of Ten Choice Board' activity
*Array:* an arrangement of objects, pictures, or numbers in columns and rows to represent multiplication

**Fluency:** Make sure you are practicing your multiplication facts for 5-10 minutes every day. You can make flash cards, write out facts, jumping jacks and say facts aloud, or come up with another idea.
Week of May 4-8: **Focus on 2, 4, 8 facts. What pattern do you notice?**
Week of May 11-15: **Focus on 3, 6, 9 facts. What pattern do you notice?**

## Fill in the multiplication grid.

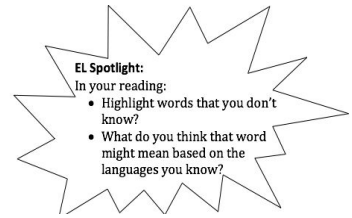| X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|----|
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| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |

EL Spotlight:
In your reading:
- Highlight words that you don't know?
- What do you think that word might mean based on the languages you know?

**Roll or Draw a Rule**

1. Choose any two-digit number and write it in the **bold** rectangle.

2. Roll a number cube (die) twice **OR** pick two one-digit number cards. The first roll or number tells you how many to add for one rule. The second roll or number tells you how many to subtract for rule two. Complete the pattern. Repeat for pattern.
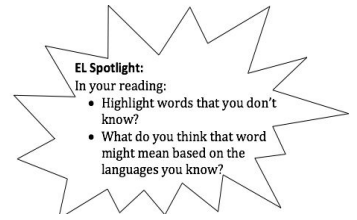
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Rule

Rule

Rule

Rule

Rule

Rule
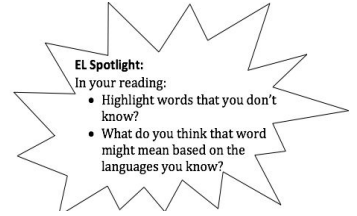
Rule

Rule

3.OA.9

2

**Odd and Even Products**

1. Investigate whether the product is even or odd when you multiply the following:
    a. odd number x even number
    b. odd number x odd number
    c. even number x even numbers
2. Try at least ten pairs of numbers for each investigation.
3. Explain your findings.

EL Spotlight:
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**Now try, Odd and Even Sums**

4. Investigate whether the sum is even or odd when you add the following:
    a. odd number + even number
    b. odd number + odd number
    c. even number + even numbers
5. Try at least ten pairs of numbers for each investigation.
6. Explain your findings
7. When might this information be useful?

3.OA.9

**A New Solar System**

The third-grade class investigates a new solar system. The third-grade class counts the number of moons for each planet. The first planet has two moons. The second planet has four moons. The third planet has six moons. The fourth planet has eight moons. If this pattern continues, how many moons does the fifth planet have? How many moons does the tenth planet have? How many moons does the ninety-seventh planet have? Show all your mathematical thinking.
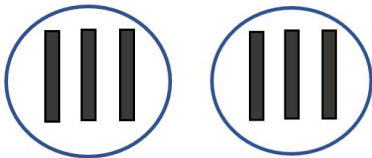
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3.OA.9(Exemplar)

**Multiples of Ten Choice Board**
1. Choose a line of four problems (vertically, horizontally, or diagonally) from the board to solve.
2. Draw a quick picture of base ten blocks to show your work. Draw a stick to represent ten and a square to represent one hundred.
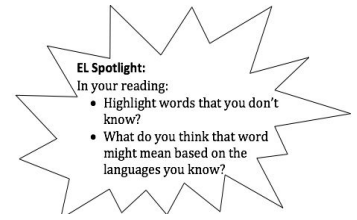
**Example:** Model 2 x 30.

EL Spotlight:
In your reading:
- Highlight words that you don't know?
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| | | | |
|---|---|---|---|
| 8 x 30. Show how to solve. | There are 3 boxes with 60 pencils in each box. How many pencils are there in all? | There are 30 stacks of books with 6 books in each stack. How many books? | Mike needs to calculate the total number of sides on 40 pentagons. How can Mike solve this problem? |
| How many sides in total are on 60 hexagons? Explain your thinking. | Jamal rides his bike for 50 minutes a day. How many minutes does he ride his bike in one week? | Model 4 x 40. What is the product? | Lisa cut 8 pieces of ribbon. Each piece measured 20 cm. How many centimeters of ribbon did Lisa cut? |
| A baker places 30 trays of muffins in the oven. Each tray holds 6 muffins. How many muffins in all? | What is the product of 4 x 30? Explain your thinking. | Pole school has 5 third grade classes. Each class has 30 students. How many third grade students are at Pole? | Find the unknown factor:<br>a. 7 x ? = 420<br>b. ? x 40 = 360 |
| Each shelf in the library holds 40 books. There are 8 shelves in the animal section. How many animal books are there? | How would you explain to a friend how to multiply a one-digit number by a multiple of ten? (The answer is **not** add a zero.) | There are 3 rows of apples with 30 apples in each row. How many apples are there? | What is the product of 5 x 50? Explain your thinking. |

**Dimes and Pennies**

Jeremy collects pennies. Jeremy keeps his pennies in containers that hold sixty pennies each. Jeremy has enough pennies to fill nine containers. Lyla collects dimes. Lyla keeps her dimes in containers that hold twenty dimes each. Lyla has three containers full of dimes. Jeremy thinks his collection is worth more money because he has more coins and containers than Lyla. Is Jeremy correct? Show all of you mathematical thinking.
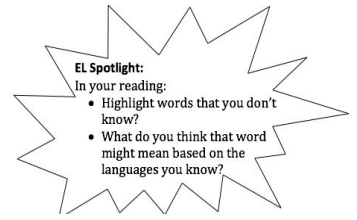
EL Spotlight:
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3.NBT.3(Exemplar)

*Week 4: Multiplication and Division*

## Identify the Unknown

EL Spotlight:
In your reading:
- Highlight words that you don't know?
- What do you think that word might mean based on the languages you know?

1. Read each problem and identify the unknown.
2. Represent each problem using an equation with a symbol for the unknown number.
3. Do you need to find the number of groups or the number of items in a group? Sort the problems under the appropriate headings on the table.
4. Use pictures, numbers, or words to solve each problem.

| | | |
|---|---|---|
| **A)** A teacher gave out 27 pencils to 9 students. Each student got the same number of pencils. How many pencils did each student get?<br><br>Equation: _____ | **B)** A baker made 27 cupcakes and packed them in small boxes. Each box held 3 cupcakes. How many boxes of cupcakes did he have?<br><br>Equation: _____ | **C)** A gardener had 28 seeds to plant in pots. She decided to plant 7 seeds in each pot. How many pots of seeds did she plant?<br><br>Equation: _____ |
| **D)** A class of 32 students were divided equally into teams for a relay race. Each relay team had 4 students. How many relay teams were there?<br><br>Equation: _____ | **E)** A store owner had 28 hats to display in rows in the store window. He decided to display 4 rows with the same numbers of hats in each row. How many hats were in each row?<br><br>Equation: _____ | **F)** A farmer had 32 pounds of grain. He had 8 cows to feed. Each animal was given the same amount of grain. How many pounds of grain did each animal get?<br><br>Equation: _____ |

Sort the problems above into the two groups below. Write the letters (**A, B, C, D, E, F)** in the boxes below.

| Number of Groups Unknown | Number of Items in a Group Unknown |
|---|---|
| Letter of Problems: | Letter of Problems: |

3.OA.2

**Seventy-Two Legs**

An empty barn is full of spiders. The owner of the barn says that no more than seventy-two legs at a time live in the barn. The owner says that if all the spiders move out and crickets move in, the rule stays the same. The owner thinks that division can be used to figure out how many spiders or how many crickets live in the barn without breaking the rule. How can the owner use division to figure out how many spiders or how many crickets live in the barn? Show all your mathematical thinking.

**EL Spotlight:**
In your reading:
- Highlight words that you don't know?
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**Cricket:**

**Spider:**

3.OA.2

**Multiplication Choice Board**
1. Choose a line of five problems (vertically, horizontally, or diagonally) from the board to solve.
2. For each problem: a.) Write an equation with a symbol for the unknown number. b.)Draw an array, a number line, or a mathematical picture (diagram) to model the problem. c.) Answer the question in a complete sentence.

| | | | | |
|---|---|---|---|---|
| Mr. Cabral had 28 pencils which he shared equally between 7 students. How many pencils did each student receive? | Each group in the gym has 7 third graders. If there are 42 third graders in all, how many groups are there? | If 21 students are standing with 3 students in each line. How many lines are there? | Jack plays basketball for 2 hours each day. How many hours does Jack spend playing basketball in one week? | 6 rows of monkeys. 10 monkeys in each row. How many monkeys? |
| 24 apple trees in the orchard are planted with 4 trees in each row. How many rows are there? | There are 9 rows of erasers. 5 erasers are in each row. How many erasers? | Scott bought 7 ice cream cones that each cost the same amount. He spent $21. How much did each ice cream cone cost? | There are 12 slices of pizza. Each child gets 4 slices of pizza. How many children are there? | 9 cars are in a parking lot. Each car has 4 wheels. How many wheels are there in all? |
| Each pile of laundry has 6 shirts. If there are 30 shirts in all, how many piles of laundry are there? | There are 7 trays.Each tray has 6 glasses of water. How many glasses of water are on the trays? | If 28 flower pots are arranged in 7 equal rows, how many flower pots are in each row? | There are 7 rows of tomatoes in the garden with 5 tomatoes per row. How many tomatoes? | Jack puts 15 basketballs into 3 equal groups. How many basketballs are in each group? |
| 5 rows of elephants. 5 elephants in each row. How many elephants? | You see 18 birds. You see 2 trees. Each tree has the same number of birds. How many birds are in each tree? | Kate has 30 cookies. She puts 5 cookies in each bag. How many bags does Kate need? | Jody runs 8 laps around the track each morning. How many laps does Jody run in 5 days? | If 18 books are arranged in 3 equal rows, how many books will be in each row? |
| Jessie bakes 8 trays of cookies. Each tray holds 6 cookies. How many cookies does Jessie bake? | On a table, there are 2 plates in each row and 12 plates in all. How many rows are there? | 2 rows of crabs. 8 crabs in each row. How many crabs? | Tanya picks 25 flowers from the garden. She gives an equal number of flowers to 5 people. How many flowers does each person get? | There are 40 robots in a toy store. The store owner put 8 robots on each shelf. How many shelves had robots on them? |

3.OA.3

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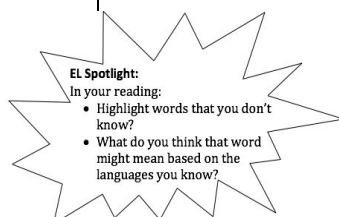
**BUMP** (multiplication version)

**This is a 2-person game or one person can play with 2 sets of objects. We will send home different versions in weeks to come.**
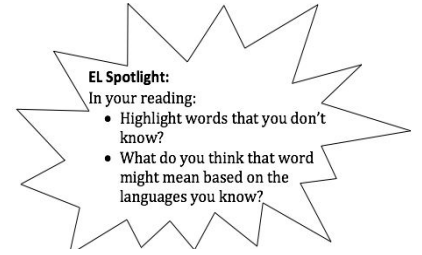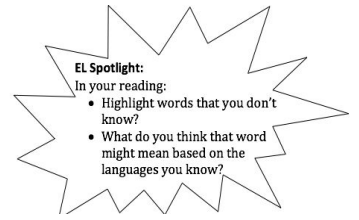
*Materials:* *2 dice or cards from last packet (Ace[1]-6) (if you want more of a challenge use higher number cards), 2 sets of small objects*

*Directions: **Fill in some numbers between 1-36 in each square (these numbers may change if you choose cards >6. Roll the dice or flip over 2 number cards and multiply the numbers together. Cover the space that matches the product with your object. You can bump your partner's object and take their space! If you cover a space with 2 objects, you lock that space and it can't be bumped. The player to use the most objects wins!***

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**Sharing Candy**

1. Choose one of the following numbers…..10, 16, or 28.
2. Imagine that you had this number of candies. How many friends could you share them with so that you all had an equal number of candies? Use drawings and equations to show all possible solutions.
3. How many different solutions did you find? How can you be sure that you have found all possible solutions?
4. How many friends would you choose to share your candy with? Why did you choose that amount of friends?

**EL Spotlight:**
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5. Choose one of these numbers…. 12, 24, or 36.
6. Suppose that this number of musicians are in a marching band and are getting ready for a parade. How many different ways could the musicians arrange themselves in equal rows?
7. Build and draw all the possible arrays. Write an equation for each array.
8. Which arrangement would you choose? Why would you choose that arrangement?

3.OA.9