Name _____ Date _____

Skill: Multiplication: By 1- and 2-Digit Numbers

Marvelous Math Tool

1. Start at the bottom of the pyramid. Work your way up, solving the problems on one side. Write the answers in the boxes.
2. Repeat on the other side.
3. Use the numbers on the bold lines to fill in the lines in the riddle box. Then use the key to solve the riddle.

What is the best tool to use when doing math?

_____

KEY:

I	P	S	R	E	M	L	T	G	U
0	1	2	3	4	5	6	7	8	9

Multiply by 5. → ___ ___,___ ___ ___

Multiply by 2. → ___ ___ ___,___ ___ ___

Multiply by 17. → ___ ___,___ ___ ___

Multiply by 4. → ___ ___,___ ___ ___

Multiply by 9. → ___ ___ ___

Multiply by 37. → ___ ___,___ ___ ___

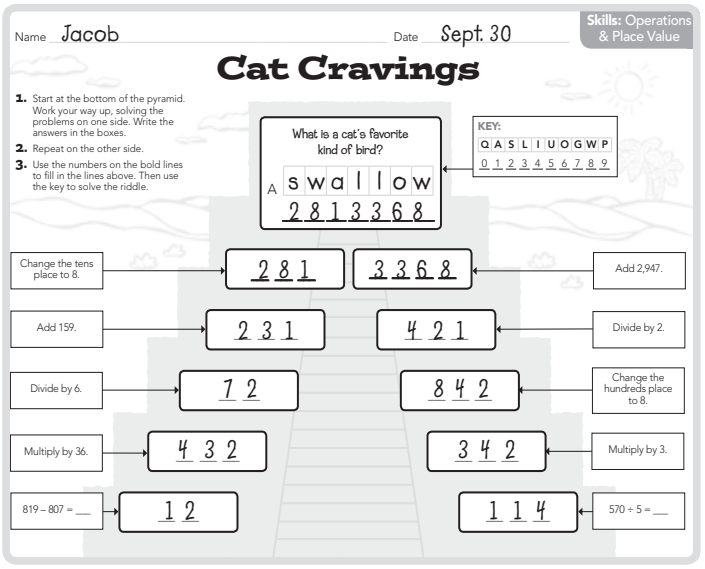
6 x 13 =___ → ___ ___

271 x 2 =___ → ___ ___ ___

Solving the Pyramid Puzzles

Students will enjoy solving the pyramid puzzles on their own. But, before they begin working independently, demonstrate how to solve a few puzzles to ensure they understand the steps and will succeed. As you work on the puzzles with students, you might use a think-aloud method to model strategies for solving the problems to complete the puzzles.

1. To begin, students solve the bottom problem on one side of the pyramid. They will use this answer to fill in the next box. They then look at the problem and/or directions on the next step and find the answer that goes there, and so on. As students work, encourage them to mentally ask questions such as: *What type of problem is this? What information is provided? How should that information be used? What methods or operations are needed to solve the problems?*
2. Students work their way up the pyramid in this manner, one problem at a time, until they have solved the last problem on that side. (Encourage them to recheck their answer to each problem before moving on to the next step.)
3. Students complete one side of the pyramid, then the other.
4. To crack the code for the riddle, students take the numbers from the final answer on each side of the pyramid and write them under the boxes at the top. Then they use the numbers and letters in the key to decode the answer to the riddle. For example, in the puzzle below, students write 1, 8, 2, 2, 1, 9 on the lines under the boxes. They check the key to find the letter corresponding to each number and write that letter in the box above the number. When finished, the answer to the riddle is revealed!



Tips for Working With the Puzzles

Easy and quick suggestions to extend learning:

- Decide ahead of time whether you want to do the pyramid puzzles with the class as a whole, or have students work alone, in pairs, or in groups. Then choose a puzzle and make a copy for each student. For whole-class or small-group lessons, you might use an overhead projector or interactive whiteboard.
- At first, you might read and review how to solve each problem with students, especially beginners. Provide guidance to give students help with any problems they find difficult.
- For extra support, list the "answers" for the puzzles in random order on the board or chart paper. Have students solve the problems and check for their answers on the list before recording their responses on the puzzle.
- If students get stuck on a particular step, you might ask them to talk through their problem-solving process to see if they can get themselves "unstuck." Offer students guidance where necessary, to help move them to the correct answer.
- After students complete the problems on the pyramid, encourage them to go back and check their answers before they fill in the numbers and letters to the riddle.
- Ask students to pair up and compare their answers after completing a puzzle. Encourage them to share their problem-solving strategy for each problem. Through sharing and discussion, students learn that more than one method might be used to solve the same problem. This also gives them the opportunity to communicate and evaluate their own thinking and processes when solving problems.
- Challenge students to solve the pyramid in reverse. To do this, fill in the answers on the left and right sides of a puzzle, leaving both bottom answers blank. Then mask all the problems except those at the bottom on the left and right sides. Copy the puzzle and distribute it to students. To complete the puzzle, have students work from top to bottom, using the opposite operation to discover the missing problems and then writing them in the blank boxes. For example, if subtraction was used to solve the original puzzle, then students will use addition to come up with the missing problems. Similarly, they will work backward, using multiplication to complete a division puzzle. This activity helps students understand the inverse relationships of addition and subtraction and multiplication and division.

ANSWERS Page 18, **Marvelous Math Tool**

Riddle: multipliers
5,9,6,7,0,1,6,0,4,3,2

59,670	160,432
11,934	80,216
702	20,054
78	542