Big Ideas for Little Scholars
RESOURCES for GIFTED & ADVANCED LEARNERS

OUT OF OUR MATH MINDS
TEACHER'S GUIDE

THE CHALLENGES

Use the challenge tasks one or two at a time for quick brainteasers or use them all in a cross-curricular weekly challenge, changing the target number each week. Copy and laminate the reference cards (page 2) on colored cardstock and have several sets available to students. Display these around or near the bulletin board display.

QUICK BRAINTEASER IDEAS

- **Display one quantitative and/or one verbal task.** Have students come up with as many responses as they can in 5-10 minutes. Half sheets of paper can be used for this (see page 5).

Options:
Provide students with the list of tasks (see pages 3-4) or cards and allow them to choose one or two. Nonverbal tasks can be optional and tried out on the back of the page OR provided as an option for students as they finish other work.

ONGOING WEEKLY CHALLENGE

- **Display the target number where students can see it all week or month**. Start with two-digit even numbers, then in later weeks, try odd numbers.
- Students may work on the challenges as part of a bellringer or morning work all week or month.

Q-1

Make the number using only the digits in the number. How many equations can you write?

Ex. The target number is 24. Use the digits 2 and 4 to make the number.
One response: (2 x 4) + (4 x 4) = 24

V-1

Write a poem or short story using the target number of words.

Ex. The target number is 25. Write a poem or short story that is exactly twenty-five words.

Q-2

Add another digit in the number to create a 3-digit number. Make the number using only its digits. How many equations can you write?

Ex. The target number is 36. Add a digit to make 363. Use the digits 6 and 3.
(3 x 3 x 33) + 66

V-2

Write the number as a MAD GAB.

Ex. The target number is 21.
Possible response:
Too went he won.
To when tea won.
The target number is 37
The her tease heaven

Q-3

Make the number as many ways as you can, using exactly three operations.

Ex. The target number is 36.
2 x 15 + 10 – 4

V-3

List words that can be made from the letters of the number when written as a word.

Ex. The target number is 32. What words can be made from THIRTY-TWO?
row, toy, who, how, riot, worth, etc.

Q-4

Write equations using the digits of the number in any form (fractions, decimals, etc.) How many equations can you write?

Ex. The target number is 21. Use the digits 2 and 1, in any form, to make 21.
$[2\ (1/2 + 1/2) + 1] \times (2^3 - 1)$

V-4

Write letter equation puzzles using the target number.

Ex. The target number is 36.

36 = H in 1½ D (hours in 1½ days)
36 = the number of I in a Y
(inches in a yard)

Q-5

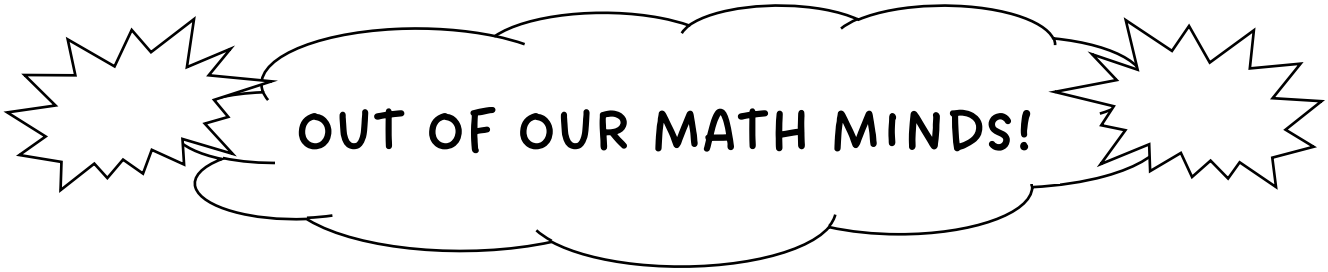
Find out the number of steps it takes to make a palindrome. Begin with any number made from the digits.

Ex. The target number is 23. Reverse to make 32 and determine the steps to make a palindrome. Try 332, 223, and other numbers made from the digits.

V-5

Write a lipogrammatic poem. Omit the letters of the alphabet that correspond with the digits.

Ex. The target number is 45. Write a poem leaving out the fourth and fifth letters of the alphabet (D and E).



Quantitative Tasks

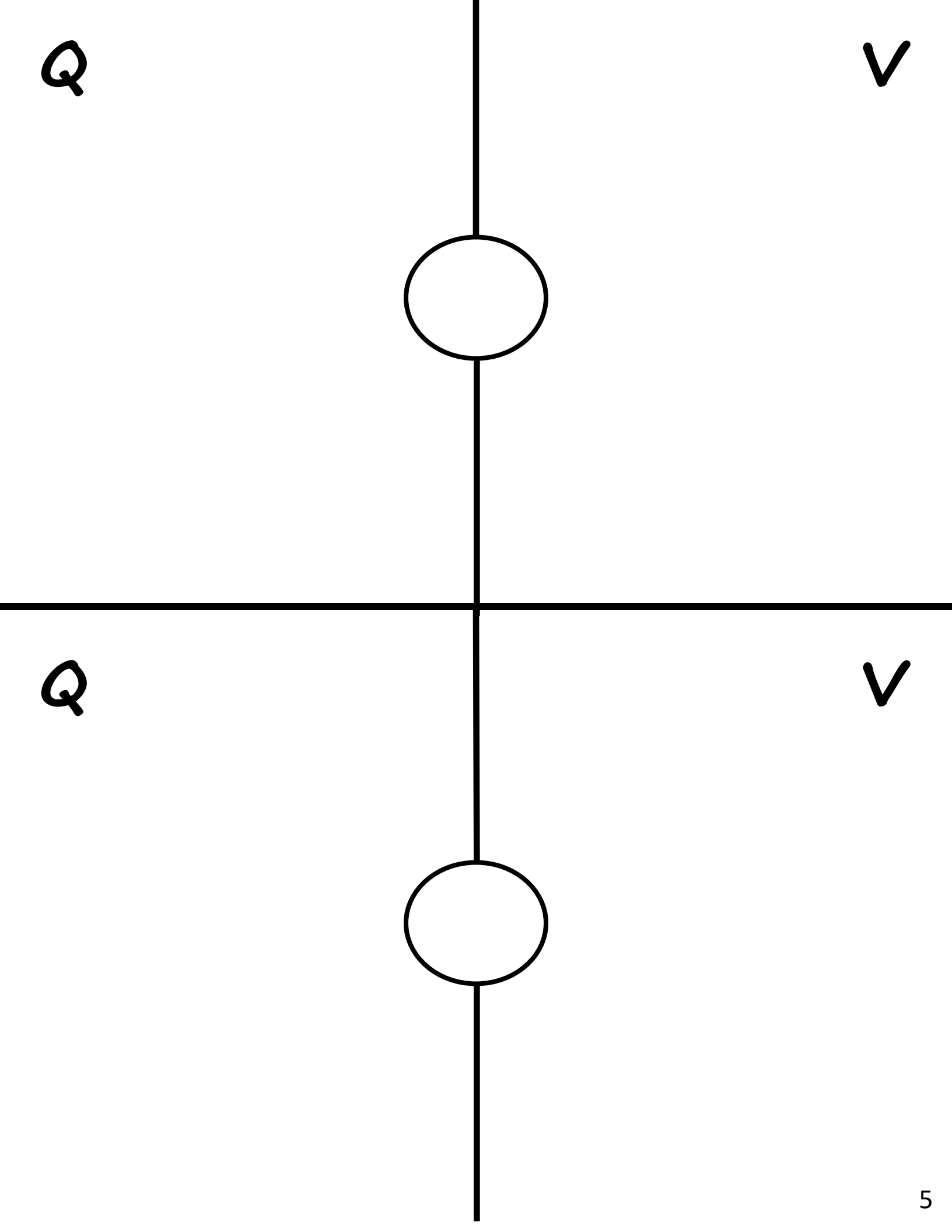
- **Make the number using only the digits in the number.** How many equations can you write?
- **Make the number as many ways as you can, using exactly three operations.** How many equations can you write?
- **Add another digit in the number to create a 3-digit number. Make the new number using only its digits.** How many equations can you write?
- **Write equations using the digits of the number in any form** (fraction, decimals, exponents). How many equations can you write?
- **Find out the number of steps required to make palindromes** using the digits. Test any number that can be made from the digits.
- **Create your own mathematical task!**

Verbal Tasks

- **Write a poem or story with this number of words.**
- **Write the number as a MAD GAB.**
- **List words that can be made** from the letters of the number written as a word.
- **Create a list of letter equation puzzles** using the number.
- **Create a lipogrammatic poem**, omitting the letters in the alphabet represented by the digits in the number. (A =1, B= 2, C=3, etc.)
- **Write the same phrase or sentence** 24 different ways,
- **Create your own task that relates the number to something with letters or words!**

Nonverbal

- **Create a number drawing** using only the digits and numbers that can be made from the digits
- Create a **tessellation** with the number of shapes.
- **Draw something that illustrates the number** without using words or numbers.
- **Create your own task that involves illustrating or performing.**


Q
V
Q
V