

CASTING OUT 9s

Math Wheel

The wheel outlines the steps of Casting Out 9s:

- 1) Cast Out 9s in the problem
 - 2) Add the remaining digits until you get a single digit
 - 3) Multiply the single digits
 - 4) Cast Out 9s in the answer; add the digits until you get a single digit
 - 5) Compare the problem and answer sums.
- There are notes for each section and an example that carries through all the steps.
 - There are 4 multiplication problems in the pattern around the circle, so students can try casting out nines to check their answers.
 - Students can color the background pattern for fun, as well as the headings and doodle arrows.

If you have any questions, please email me at ellie@cognitivecardiomath.com.

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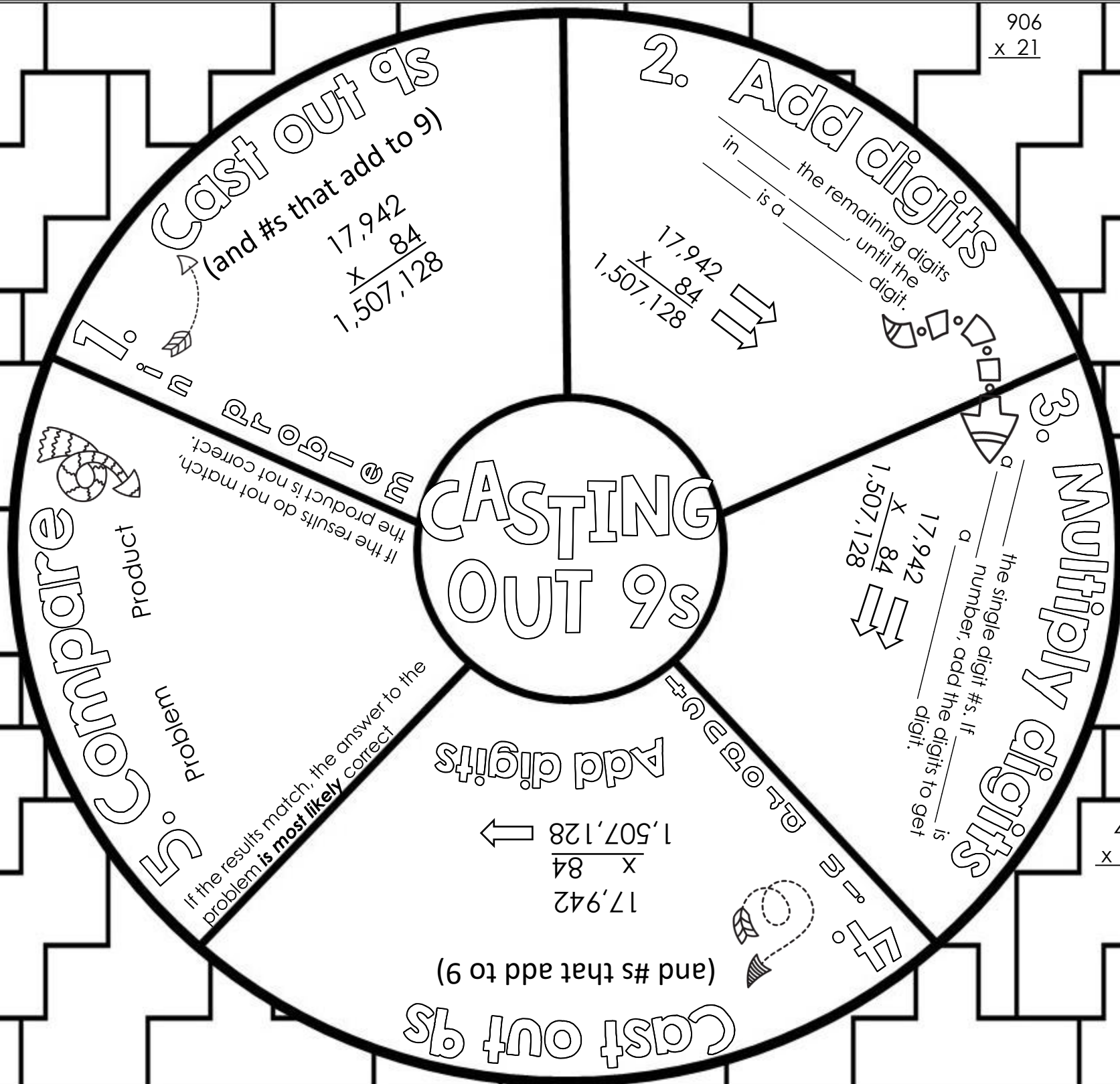
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361
x 14

906
x 21



39
x 18

457
x 29

CASTING OUT 9s

1. Cast out 9s (and #s that add to 9)

in

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

• 9 is cast out - it's a 9
 • 7 and 2 are cast out - they add up to 9
 • 1 and 4 stay
 • 8 and 4 stay (don't = 9)

2. Add digits

Add the remaining digits in each row, until the sum is a single digit.

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

$1 + 4 = 5$
 $8 + 4 = 12$
 $1 + 2 = 3$

3. Multiply digits

Multiply the single digit #s. If product is a 2-digit number, add the digits to get a single digit.

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

$5 \times 3 = 15$
 $1 + 5 = 6$

4. Compare

Product

If the results do not match, the product is not correct.

Problem

If the results match, the answer to the problem is **most likely** correct.

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

$1 + 5 = 6$
 $5 \times 3 = 15$
 $1 + 5 = 6$

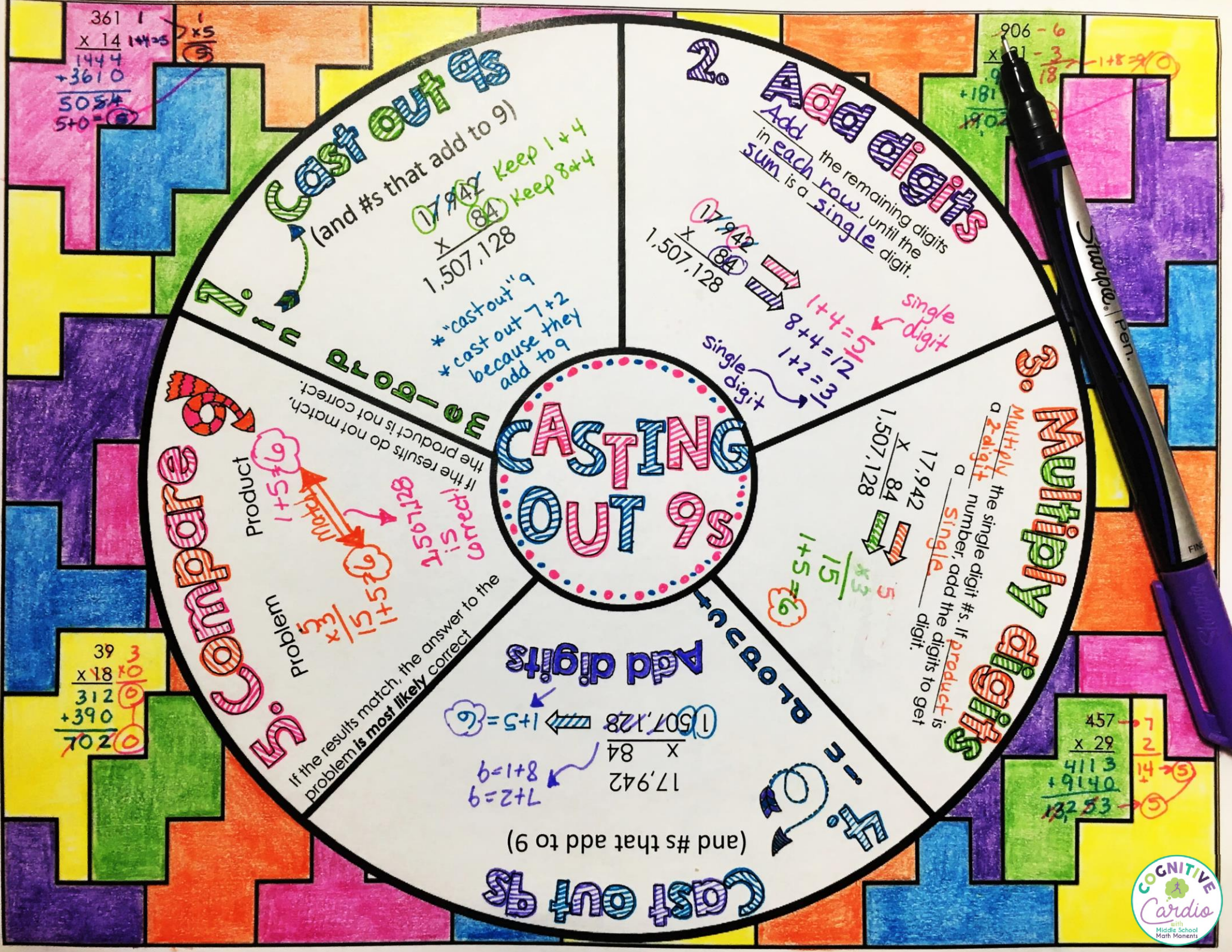
Cast out 9s (and #s that add to 9)

Add digits

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

$1 + 5 = 6$

Cast out 9s



6. Compare

If the results match, the answer to the problem is most likely correct

If the results do not match, the product is not correct.

Product $6 \times 5 = 30$

Problem $6 \times 5 = 30$

Match!

6 + 5 = 11

3 + 0 = 3

$$\begin{array}{r} 39 \\ \times 18 \\ \hline 312 \\ + 390 \\ \hline 702 \end{array}$$

$$\begin{array}{r} 361 \\ \times 14 \\ \hline 1444 \\ + 3610 \\ \hline 5054 \end{array}$$

5. Cast out 9s

(and #s that add to 9)

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

7 + 2 = 9

8 + 1 = 9

1 + 5 = 6

4. Add digits

If the results match, the answer to the problem is most likely correct

3. Multiply digits

Multiply the single digit #s. If product is a 2-digit number, add the digits to get a single digit.

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

7 × 4 = 28

1 + 5 = 6

2. Add digits

Add the remaining digits in each row, until the sum is a single digit.

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

1 + 4 = 5

8 + 4 = 12

1 + 2 = 3

1. Cast out 9s

(and #s that add to 9)

$$\begin{array}{r} 17,942 \\ \times 84 \\ \hline 1,507,128 \end{array}$$

1 + 7 = 8

9 + 4 = 13

2 + 8 = 10

THANK YOU!

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ABOUT THE AUTHOR

I (Ellie) taught in the classroom for nearly 25 years at both the middle school and elementary levels, teaching 2nd, 4th, 5th, and 6th grades. I earned my master's degree in technology in education and have also worked in the e-learning field for over 5 years. I love helping students discover the 'why' in math and help facilitate teachers in that process as well. I'm so honored that my resources have been used by hundreds of thousands of students!

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