

# Mental Math · Divisibility

CKSTEM Math Problem Solving · Grades 5–7

Try each problem on your own first — then watch the solution videos.

## ★ The Divisor Only Sees the Tail

Is 3,752 divisible by 5? By 4? By 8? By 3? By 9? And does 7,920 pass every test for 2, 3, 4, 5, 6, 8, 9, and 10?

WORK IT OUT HERE

## LO Run the Rules — Each Divisor Reads Its Own Tail

Which of 2, 3, 4, 5, 6, 8, 9, 10 divide 7,740? And which of them divide 5,832?

WORK IT OUT HERE

**L1 Turn the Rule into an Equation**

Find the digit A so that 46A1 is divisible by 9. Then find digits A and B so that 257AB is divisible by 36, making A + B as large as possible.

WORK IT OUT HERE

**L2 The Alternating Swing ( $\div 11$ )**

Find the digit A so that 8A35 is divisible by 11. And what is the remainder when 918,273 is divided by 11?

WORK IT OUT HERE

**L3 One Thousand Is One Short**

Is 12,345,678 divisible by 7? And what is the remainder when it is divided by 13?

WORK IT OUT HERE

**L4 Coprime Pieces**

Is 18 divisible by 12? Then find every (A, B) so that 7A2B is divisible by 72.

WORK IT OUT HERE

## L5 Everything, Combined

Find digits A and B so that  $5A41B2$  is divisible by 88, and give the largest such number. Then: is 638,638 divisible by 7, 11, and 13, and why does every number of the form  $abcabc$  behave the same way?

WORK IT OUT HERE