3 Steps to Increase Math DOK Levels

Step 1: Find a One-Operation Problem

- Procedural problems with one or two operations are easiest to modify.
- Other problems may also be modified but may not be as easy.

Adding 2-Digit Numbers
Solve.

$41 + 36 =$ ___

Multiplying Fractions
Solve.

$\dfrac{3}{7} \times \dfrac{2}{9} =$ ___

Trigonometry
Solve.

$\sin \dfrac{\pi}{3} =$ ___

Step 2: Go from DOK 1 to DOK 2

- Strategically remove some information from the problem to prevent immediate calculation
- Increase the quantity of solutions needed to increase the need to look for patterns

Adding 2-Digit Numbers
Using the digits 1 to 9, at most one time each, fill in the boxes to make two different pairs of two-digit numbers that have a sum of 71.

$\boxed{}\boxed{} + \boxed{}\boxed{} = 71$

Multiplying Fractions
Using the digits 1 to 9, at most one time each, fill in the boxes to make two different pairs of fractions that have a product of 2/3.

$\dfrac{\boxed{}}{\boxed{}} \times \dfrac{\boxed{}}{\boxed{}} = \dfrac{2}{3}$

Trigonometry
Using the digits 1 to 9, at most one time each, fill in the boxes to make two true number sentences.

$\sin \dfrac{\boxed{}\pi}{\boxed{}} = 1$

Step 3: Go from DOK 2 to DOK 3

- Introduce the need to optimize the solution by making the greatest or least product/sum/difference/quotient/answer.
- Another optimization option is make the answer closest to a specific value.

Adding 2-Digit Numbers
Using the digits 1 to 9, at most one time each, fill in the boxes to make the smallest sum.

$\boxed{}\boxed{} + \boxed{}\boxed{} = \boxed{}\boxed{}$

Multiplying Fractions
Using the digits 1 to 9, at most one time each, fill in the boxes to make two fractions that have a product that is as close to 4/11 as possible.

$\dfrac{\boxed{}}{\boxed{}} \times \dfrac{\boxed{}}{\boxed{}}$

Trigonometry
Using the digits 1 to 9, at most one time each, fill in the four boxes to make a result that has the greatest possible value.

$\sin \dfrac{\boxed{}\pi}{\boxed{}} = \dfrac{\sqrt{\boxed{}}}{\boxed{}}$