

Area/Skill—Math	Cognitive Skill Level-- Application	Correlation—Multi-step problem solving & order of operations
<p><b>Activity Title:</b> Who's on First</p> <p><b>Goal/Objective:</b> Be able to write a multi-step word problem as a number sentence using appropriate operation symbols. Then solve using order of operations. Determine if answer and problem set-up was correct.</p> <p><b>Lesson Outline:</b></p> <p><b>Introduction</b> Model multi-step problem. Have this written on whiteboard in colored pen: Grace charges \$15 for a haircut and \$45 for a permanent. If she does 10 haircuts and 3 permanents on Tuesday, how much will she earn that day? Write as number sentence, then solve using order of operations. Check answer with calculator, using full functions. Re-read question to see if answer makes sense.</p> <p><b>Activity</b> Have students set up problem #1, p. 63. Distribute cardboard letters to five volunteers. Volunteers order themselves appropriately at front of class. P steps forward, students do parentheses (if any) in problem. E steps forward next, students do exponents and roots (if any), and so on. M and D must decide who gets to go first, as well as A and S. When finished, check final answer on calculator, letting calculator determine order of operations. Do they match? Does it answer the question? Continue in this manner for all problems on p. 63.</p> <p><b>Debriefing/Evaluation Activity:</b></p> <p>Ask students how they can apply this exercise on the GED test. Suggest they cover up multiple-choice answers while working the problems, come up with their own number sentence. Does it match one of the choices? Does it solve the problem? If it doesn't match, can you make it fit by algebraic manipulation?</p>		<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>*Steck Vaughn GED Math text</li> <li>*Whiteboard, colored pens</li> <li>*Large cardboard signs with letters &amp; operation symbols--PEMDAS</li> <li>*Pencil, paper</li> <li>*Calculator</li> </ul> <p><b>Extension activity</b></p> <p>Divide class into groups. Each group writes one multi-step problem for other groups to solve using same format. Can there be more than one way to set up a problem correctly?</p> <p><b>ESE Accommodations</b></p> <ul style="list-style-type: none"> <li>*Large signs for sight impaired</li> <li>*Movement for kinesthetic learners</li> <li>*Colored pens for ADD, dyslexia</li> <li>*Extend time as needed</li> </ul>
<p><b>Real-Life Connection:</b></p> <p>Students rarely see the application that order of operations can have. If they could see its use in problem solving as a way to double check their work they could use this method on the GED test and in real problems involving more than one step. (Balancing a checkbook, figuring out a paycheck involving 2 rates of pay, total cost of purchases of multiple items with repeated items, etc.)</p>		