RICH MATH TASKS:
Strategies for Challenging Gifted Learners

Webinar Participant Handout

Needs of Advanced Learners

- Instruction focused on big ideas (rather than facts)
- High interest and opportunities for creativity in problem solving
- Connection and application to the real world
- Greater complexity of tasks and depth of exploration
- A responsive pace that emphasizes understanding, not rote memorization
- Supported risk with challenging tasks

Standards for Mathematical Practice (SMP)

(NGA and CCSSO, 2010; http://www.corestandards.org/Math/Practice/)

	1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively.
	3. Construct viable arguments and critique the reasoning of others. 6. Attend to precision.
	4. Model with mathematics. 5. Use appropriate tools strategically.
	7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

Strategies for Differentiating Math Tasks

Sometimes it may be appropriate to modify already-complex tasks provided in the Problem Set to increase complexity, invite exploration of properties, patterns, or structures, or engage learners in deeper application of the Standards for Mathematical Practice. Use the space below to take notes on the examples provided in the webinar.

Elements of Rich Tasks	
Differentiating for Depth & Complexity	• Does that work all the time? Support your ideas with evidence.
Differentiating for Application	• What professionals use ____ in their work and how do they use them?
Differentiating for Creativity	• What is the power of ____ and what impact does it have on society?

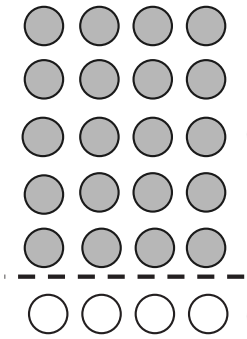
Supporting Student Discourse – provide a framework to guide students in asking each other questions during discussions about rich math tasks

 Gathering Information	Students recall facts, definitions, or procedures. • What should you do first? • What is the formula for the area of a rectangle? • What does each factor mean in a multiplication equation?
 Probing Thinking	Students explain, elaborate, or clarify their thinking, including articulating the steps in solution methods or the completion of a task. • How did you decide what to do first? • Can you show your thinking in a different way? • Can you explain more about how you used that model to find an answer?
 Making the Mathematics Visible	Students discuss mathematical structures and make connections among mathematical ideas and relationships. • How does your word problem relate to the equation or model? • Can you use your model to find a more efficient way to solve? • How are these solutions alike and different?
 Reflection & Generalization	Students reveal deeper understanding of their reasoning and actions, including making an argument for the validity of their work. • How can you tell, without calculating, how many digits the product of two 2digit numbers will have? • How do you know that your answer is reasonable? • Were your predictions correct? Why or why not?

Name _____ Date _____

1. Label the array. Then, fill in the blanks below to make true number sentences.

a. **6 × 4 =** _____



(5 × 4) = 20

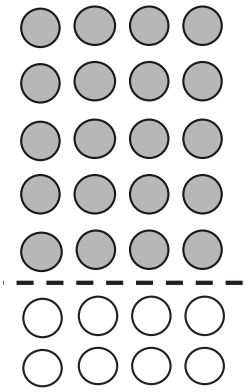
(1 × 4) = _____

(6 × 4) = (5 × 4) + (1 × 4)

= 20 + _____

= _____

b. **7 × 4 =** _____



(5 × 4) = _____

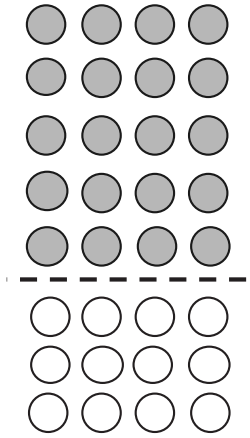
(2 × 4) = _____

(7 × 4) = (5 × 4) + (2 × 4)

= _____ + _____

= 28

c. **8 × 4 =** _____



(5 × 4) = _____

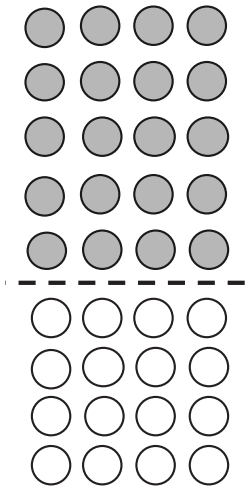
(____ × 4) = _____

(8 × 4) = (5 × 4) + (____ × 4)

= _____ + _____

= _____

d. **9 × 4 =** _____



(5 × 4) = _____

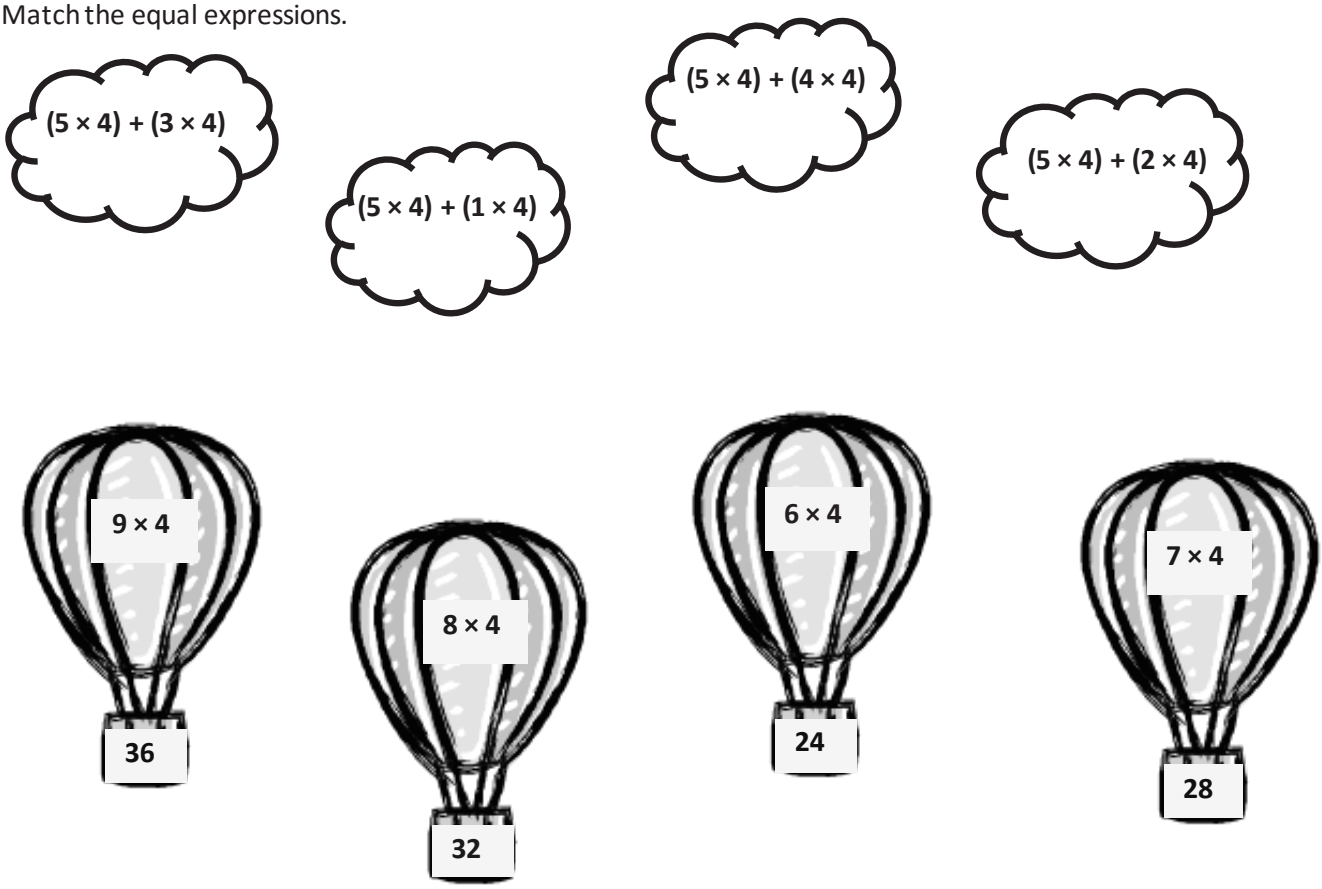
(____ × 4) = _____

(9 × 4) = (5 × 4) + (____ × 4)

= _____ + _____

= _____

2. Match the equal expressions.



3. Nolan draws the array below to find the answer to the multiplication expression 10 × 4. He says, "10 × 4 is just double 5 × 4." Explain Nolan's strategy.