

A Math Task-

30% of 70

Explain what this means in words.

Create a model to illustrate this problem.

Write a word problem to match this expression.

Identifying Potential Learning Targets

Step One:

Essential Standard from grade 7 –

7.A.2 - Represent change in the relationship between two variables in arithmetic sequences

Clarifying Objective

7.A.2.1 – Represent relationships between two variables in an arithmetic sequence using tables, graphs, and algebraic equations

Step Two:

Potential Learning Targets- (not in any particular order)

1. Become confident in recognizing a sequence as an arithmetic sequence
2. Determine some missing values in a given arithmetic sequence
3. Identify the constant rate of change in the sequence terms
4. Create an arithmetic sequence
5. Describe and interpret a given arithmetic sequence in words
6. Use manipulatives to model a growing pattern and relate the model to its arithmetic sequence
7. Generalize an arithmetic sequence with symbols; that is, use variables and numbers to show how sequence terms are calculated
8. Recognize and utilize the relationship of the position in a sequence as a quantity that can determine the sequence term; for example in the sequence 2, 4, 6, 8, 10, 12,... the position of the term is multiplied by 2 to get the sequence term (first position has term $1 \cdot 2$, second position has term $2 \cdot 2$, third position has term $3 \cdot 2$, etc.)
9. Graph ordered pairs on rectangular coordinate plane, with position in the sequence as the independent variable
10. Use manipulatives, tables, and graphs to generalize how the values in an arithmetic sequence are determined and describe how all three representations relate
11. Solve a problem involving one or more arithmetic sequences

Step Three: Relate Potential Learning Targets to Bloom's Taxonomy

		The Cognitive Process Dimension					
		Remember	Understand	Apply	Analyze	Evaluate	Create
The Knowledge Dimension	Factual Knowledge	List	Summarize	Classify	Order	Rank	Combine
	Conceptual Knowledge	Describe	Interpret	Experiment	Explain	Assess	Plan
	Procedural Knowledge	Tabulate	Predict	Calculate	Differentiate	Conclude	Compose
	Meta-Cognitive Knowledge	Appropriate Use	Execute	Construct	Achieve	Action	Actualize

Target #1 – Being confident in one's ability to classify, so applying factual knowledge

Target #2 and 3 – Calculate, so applying procedural knowledge

Target #4 – Construct, a metacognitive application

Target #5 – Describe, remembering conceptual knowledge, and Interpret, understanding conceptual knowledge

Target #6 – Construct a model (metacognitive application) and interpret the model within the context of the sequence (conceptual understanding)

Target #7 – Generalizing- summarizing and describing with variables (remembering conceptual knowledge and understanding factual knowledge)

Target #8 – Appropriate use, remembering metacognitive knowledge

Target #9 – Constructing a graph, so applying metacognitive knowledge

Target #10 – Describing a sequence and explaining the models for that sequence, remembering and analyzing conceptual knowledge

Target #11 – Depends on the problem students are asked to solve

Your Turn ...

Select an Essential Standard and Clarifying Objective:

List Learning Targets needed to learn that content:

Learning Targets: Assessing a Range of Students' Abilities

Kind	Meaning	Examples
Mathematics Facts	Knowing conventions and correct terms for concepts	<ul style="list-style-type: none"> ▪ Knowing addition facts ▪ Knowing the names of polygons with 3, 4, 5 sides ▪ Knowing that the name given to the point (0, 0) is origin ▪ Remembering that (2, 3) indicates the point on a graph that is two units to the right of the y-axis and three units above the x-axis
Mathematics Skills and Processes	Knowing how to carry through standard procedures	<ul style="list-style-type: none"> ▪ Solving an addition problem with three addends quickly and accurately ▪ Following rules for solving an addition equation ▪ Following rules for multiplying and dividing integers
Mathematics Concepts	Concepts we want students to know; Understanding the meaning of mathematics concepts and how they relate to each other	<ul style="list-style-type: none"> ▪ Interpreting a graph and using the range of the set to describe the data ▪ Understanding that the two sides of a number

		<p>sentence should represent the same value and explaining why $2 + 3 = 4 + 1$</p> <ul style="list-style-type: none"> ▪ Generalizing and extending a pattern
Mathematical Reasoning and Proof	Using knowledge to reason and solve problems	<ul style="list-style-type: none"> ▪ Prove that a square is a rectangle ▪ Knowing which operation to use in a problem and justifying why the answer is reasonable
Mathematical Strategies, Problem Solving and Application	Being able to approach problems and use techniques and strategies to solve problems	<ul style="list-style-type: none"> ▪ Classify quadrilaterals by a rule or common property ▪ Develop strategies for finding the variable in an equation ▪ Take one strategy and apply it to multiple problem solving contexts
Personal Attitudes, Confidence and Competence	Develop a positive orientation toward the subject; becoming more confident, creative, cooperative, committed, and able to work as a team	<ul style="list-style-type: none"> ▪ Students cooperate and work as a team to classify and sort polygons, lines, angles, and quadrilaterals ▪ Students gain confidence in their problem solving abilities by sharing

		<p>and discussing various strategies in class</p> <ul style="list-style-type: none">▪ Students continue working on challenging problems and are committed to finding a solution rather than giving up quickly or quitting▪ Students enjoy math and see themselves as mathematicians
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