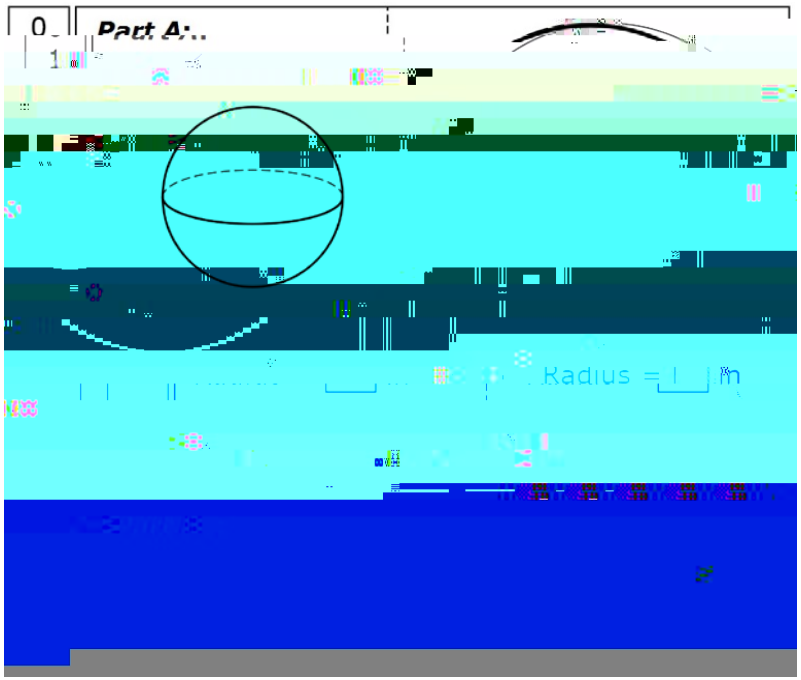
Example Item 3A.1a
Primary Target 3A (Content Domain G), Secondary Target 1I (CCSS 8.G.C), Tertiary Target 3F

The radius of sphere is twice the radius of sphere . A student claims that the volume of sphere must be exactly twice the volume of sphere .

P A:
Drag numbers into the boxes to create one example to evaluate the student's claim.

P B:



Example Item 3A.1c
Primary Target 3A (Content Domain N-RN), Secondary Target 1B (CCSS N-RN.3), Tertiary Target 3D

Consider the two numbers and
as well as their sum and product.

Drag values for and into the boxes to
make the paired statements true for both
 · and # $

If none ofnone31 Tf 4T BT -0.-3 nt

Example Item 3A.1d
Primary Target 3A (Content Domain G-CO), Secondary Target 1X (CCSS G-CO.9), Tertiary Target 3G

A geometry student made this claim:

If any two lines are cut by a transversal, then alternate interior angles are always congruent.

***P A*:**

High School Claim 3 Specifications

Task Model 3B.2

- The student is asked a mathematical question and is asked to identify or construct reasoning that justifies his or her answer.
- Items in this task model often address more generalized reasoning about a class of problems or reasoning that generalizes beyond the given problem context even when it is presented in a particular case.

Example Item 3B.2a

Primary Target 3B (Content Domain A-APR), Secondary Target 1F (CCSS A-APR.B)

( ) is a 4th degree polynomial. The graph of = ( ) has exactly three distinct -intercepts. Which polynomial could be ( )?

A. ^{3}(-3)

B. ^{2}(-2)(-1)

C. (-3)(-2)(-1)

D. (-3)(-2)(-1)

For **one** of the polynomials above, explain why it could **not** be ( ).

The graph of = [drop-down choices: the four polynomials listed in the table] has exactly [drop

Example:
The graph of = ^{3}(-3) has exactly 2 distinct -intercepts at

- = [0] [1] [2] [3] [4]

The degree of this polynomial is 4.

Response Type: Multiple Choice, single correct response and Drop Down Menu

Example Item 3B.2b
Primary Target 3B (Content Domain F-BF), Secondary Target 1N (CCSS F-BF.B), Tertiary Target 3E

The graph of a quadratic function is shown and the vertex is labeled with its coordinat47 (a) 20 (o)12 (1618 (u) -4 in)(s) 3 (p48 TcET BT 11

Example Item 3B.3a
Primary Target 3B (Content Domain N-Q), Secondary Target 1C (CCSS N-Q.A), Tertiary Target 4F

- 1 hour = 60 minutes
- 1 kilometer = 100 meters
- 1 mile ≈ 1.6 kilometers

Calvin biked 24 miles in 2 hours. What is his approximate average speed in meters per minute?

Explain or show clear steps for how you determined your answer.

Target 3C: State logical assumptions being used.

General Task Model Expectations for Target 3C

- Items for this target should focus on the core mathematical work that students are doing around the real number system, algebra, functions, and geometry.
-

Task Model 3C.2

- The student will be given one or more definitions or assumptions and will be asked to reason from that set of definitions and assumptions.

Example Item 3C.2a

Primary Target 3C (Content Domain F-TF), Secondary Target 1O (CCSS G-SRT.C)

For an acute angle θ, $\sin(\theta)$ can be defined in terms of the side-lengths of a right triangle that includes angle θ. Here is the definition:

Given a right-triangle with side-lengths and and hypotenuse ,
if θ is the angle opposite , then $\sin(\theta) =$ –.

P A:

In the figure, angle θ has a vertex at the origin, its initial side corresponds to the positive -axis, and the terminal side intersects the unit circle at the point (,).

What is $\sin(\theta)$ in terms of and according to the definition given?
Enter your answer in the first response box.

P B:

For angles that are not acute, the definition of $\sin(\theta)$ is given in terms of the unit circle.

If angle

Example

Statement	Justification
1. Given ( ) = + and ( ) = + where , , , and are integers.	Hypothesis
2. ( ) + ( ) = (+) + (+)	By Definition
3. ( ) + ( ) = (+) + (+)	**The Any-Order Property of Addition**
4. ( ) + ( ) = (+) + (+)	**The Distributive Property**
5. (+) and (+) are integers	**The Closure of the Integers Under Addition**
6. So ( ) + ( ) is a linear polynomial with rational coefficients.	Conclusion

Response Type: Drag and Drop

Example Item 3C.2c
Primary Target 3C (Content Domain A-APR), Secondary Target 1F (CCSS A-APR.C), Tertiary Target 3B

An

Target 3D: Use the technique of breaking an argument into cases.

General Task Model Expectations for Target 3D

- Items for this target should focus on the core mathematical work that students are doing around the real number system, algebra, functions, and geometry.
- The student is given
  - A problem that has a finite number of possible solutions, some of which work and some of which don't, or
  - A proposition that is true in some cases but not others.
- Items for Claim 3 Target D should either present an exhaustive set of cases to consider or expect students to consider all possible cases in turn in order to distinguish it from items in other targets.

Task Model 3D.1

- The student is given a problem that has a finite number of possible solutions that need to be treated on a case-by-case basis.

High School Claim 3 Specifications

Task Model 3D.2

- The student is given a proposition and asked to determine in which cases the proposition is true.

Example Item 3D.2a

Primary Target 3D (Content Domain A-SSE), Secondary Target 1D (CCSS A-SSE.A)

High School Claim 3 Specifications

Target 3F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions

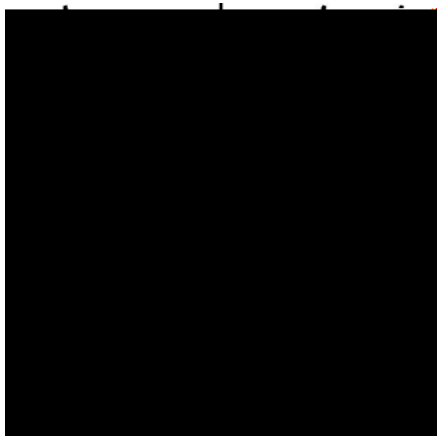
Task Model 3F.1

- The student uses concrete referents to help justify or refute an argument.

Example Item 3F.1a

Primary Target 3F (Content Domain A-REI), Secondary Target 1J (CCSS A-REI.D), Tertiary Target 3B

The two graphs shown represent the equations $=\ \cdot$ and $=\ (\ -\ )^2+$, where , >0, and , , and are rational numbers.



Which statement best describes the number of solutions the equation $\cdot\ =\ (\ -\ )^2+$ has and why?

A. There is only one solution because can't be negative.
B. There are no solutions to this equation because you can't solve it.
C. There are exactly two solutions because the graphs intersect twice.
D. There could be three solutions because the graphs might intersect at a third point.

Rubric: (1 point) Student selects the correct answer (D).

Response type: Multiple Choice, single correct response.

Example Item 3F.1b
Primary Target 3F (Content Domain G-CO), Secondary Target 1O (CCSS G-CO.C), Tertiary Target 3B

The line through and