Grade 4 Early Assessment - Teacher Resource

The following versions of this document are available:

- Google Doc: Grade 4 Early Assessment - Teacher Resource (most accessible version)
- PDF: Grade 4 Mid Assessment - Teacher Resource (most portable version)

Table of Contents

Front Matter

This assessment includes 9 items from four CT topics (1 Decomposition item; 4 Variables; 2 Conditional items; 2 Sequencing items). Four items (#1, #6, #8, and #9) use images of the Scratch interface and/or Scratch blocks.

Each item has an exemplar response(s) and a scoring guide and/or rubric included (and when applicable, other information to help with interpreting student responses). The scoring guidance and rubrics were developed by our project to assist in coding and interpreting student responses, and are explicitly focused on using student responses to make inferences about the relevant knowledge, skills, and abilities that we identified from the learning trajectories and built into our item design process. As such, other end users of these assessment instruments may choose to adapt the scoring guidance and/or rubrics to match their purposes and students.

Two of these items (#6 and #9) have associated rubrics. Further details on these rubrics are provided in the items' details.

Items

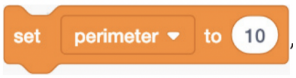
#01

Meta-data

- Item code: V.04.c
- Trajectory: Variables

Item

In Problems 1 and 2, circle True or False.

1) In this Scratch block, 

, "perimeter" is a variable.

- **True**
- **False**

Exemplar response(s)

True

Scoring Guidance

- True=1
- False= 0

Rubric(s)

None

#02

Meta-data

- Item code: DC.05.a
- Trajectory: Decomposition

Item

In Problem 2, circle True or False.
2) A computer program cannot be broken down into smaller parts.

- **True**
- **False**

Exemplar response(s)

False

Scoring Guidance

- True=0
- False=1

Rubric(s)

None

#03

Meta-data

- Item code: V.03.b
- Trajectory: Variables

Item

3) A formula for calculating the perimeter of a rectangle is

perimeter = *length*+*width*+*length*+*width*.

In this formula, what term do we use to describe *length*?

A. Loop
B. Sprite
C. Variable
D. Block

Exemplar response(s)

C

Scoring Guidance

- Choice "C"=1
- Any other choice= 0

Rubric(s)

None

#04

Meta-data

- Item code: C.06.a
- Trajectory: Conditionals

Item

4) Fill in the blanks to make conditional statements that are valid.

A. If _____, then put on a jacket.
B. If I see a spider, then _____.

Exemplar response(s)

A. If {condition} then put on a jacket.
B. If I see a spider, then {action}.

Scoring Guidance

- "condition","action"=1
- "action","condition", any other answer = 0
- score in two parts (part a and part b)
- "condition" must be a condition, an action is not a valid response for making a conditional statement

Rubric(s)

None

#05

Meta-data

- Item code: C.01.a
- Trajectory: Conditionals

Item

5) Which statement is a conditional?

A. If number is 10, then say “hello world”.
B. If number is 10.
C. Repeat 2 times: Say “hello world” for 2 seconds.
D. Say “hello world” for 2 seconds.

Exemplar response(s)

A

Scoring Guidance

- Choice "A"=1
- Any other choice= 0

Rubric(s)

None

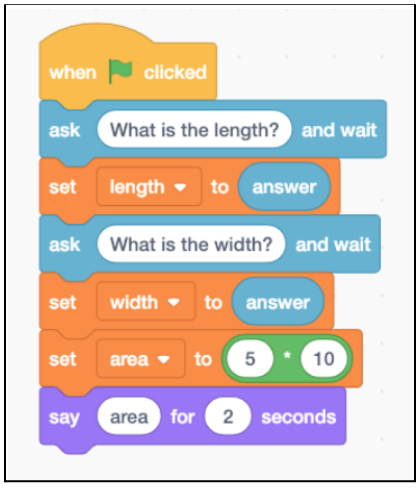
#06

Meta-data

- Item code: V.07.c
- Trajectory: Variables

Item

6) Helena wrote this code.
How would you change the code so that it would use the user input for length and width of a rectangle to calculate the area of that rectangle?



Exemplar response(s)

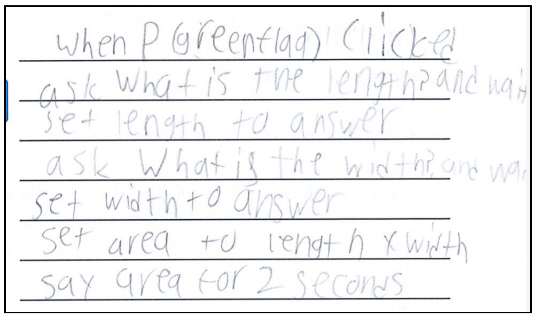
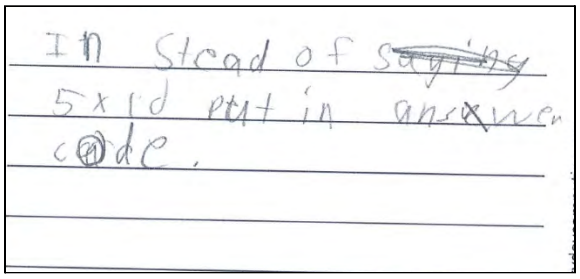
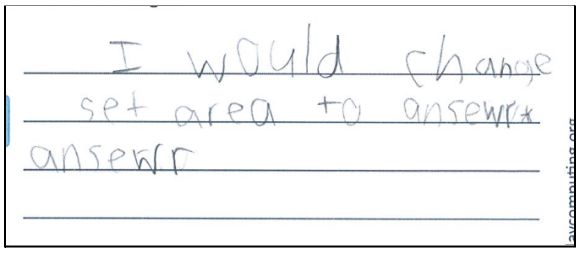
In the block “set area to 5 x 10” I would replace the 5 with the length variable and the 10 with the width variable.

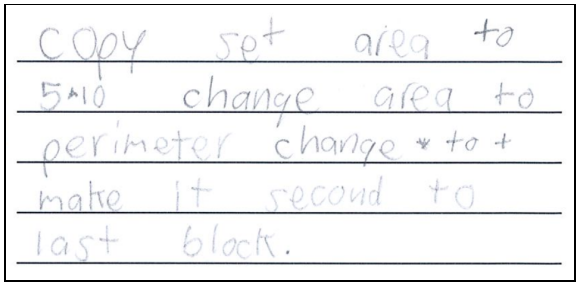
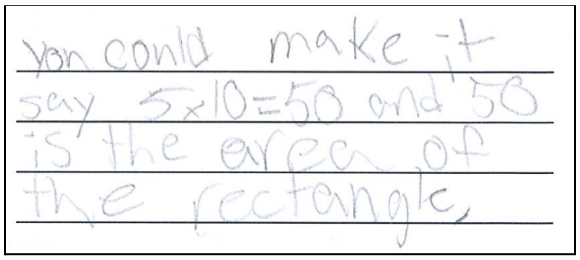
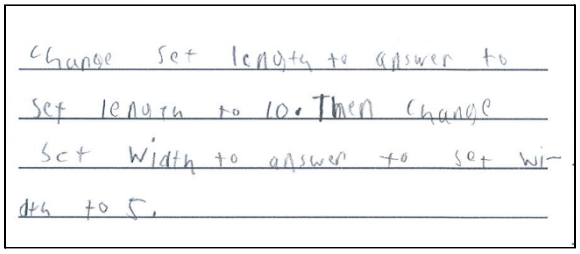
Scoring Guidance

See Rubric

Rubric(s)

This rubric allows partial credit to allow for student responses that seem to demonstrate some understanding and ability to modify existing code to replace constants with variables, even if they did not replace all constants correctly.

	Description	Example
2	Replaces each value (5 & 10) with a different variable (width and length)	
1	Replaces one value (5 or 10) with a variable (width, length), or replaces one or both values (5 and/or 10) with the answer variable	 

0	Anything else	  

#07

Meta-data

- Item code: S.04.d
- Trajectory: Sequence

Item

7) Paula bought her 6 friends each an ice cream cone and is taking them over to her friends. She can only carry 4 cones at once. One way to carry the cones is listed below. Write two other ways that Paula can carry the cones without dropping them.

Example:

- Carry 2 cones to her friends
- Carry 1 cone to her friend
- Carry 3 cones to her friends

One way:

Another way:

Exemplar response(s)

One way

*Students can provide any combination such that when summed they equal 6, but no step can exceed 4 cones.

Example 1

- Carry 4 cones to her friends
- Carry 2 cones to her friends

Example 2

- Carry 3 cones to her friends
- Carry 2 cones to her friends
- Carry 1 cone to her friends

Another way

*Students can provide any combination such that when summed they equal 6, but no step can exceed 4 cones.

Example 1

- Carry 3 cones to her friends
- Carry 1 cones to her friends
- Carry 1 cone to her friends
- Carry 1 cone to her friends

Example 2

- Carry 1 cone to her friends
- Carry 1 cone to her friends
- Carry 2 cones to her friends
- Carry 2 cones to her friends

Scoring Guidance

- 2 correct ways=1
- Incorrect way(s)/only 1 way=0
- For a response to be correct, must specify how all 6 cones are carried (i.e., # of trips and how many cones to carry on each trip).

Rubric(s)

None

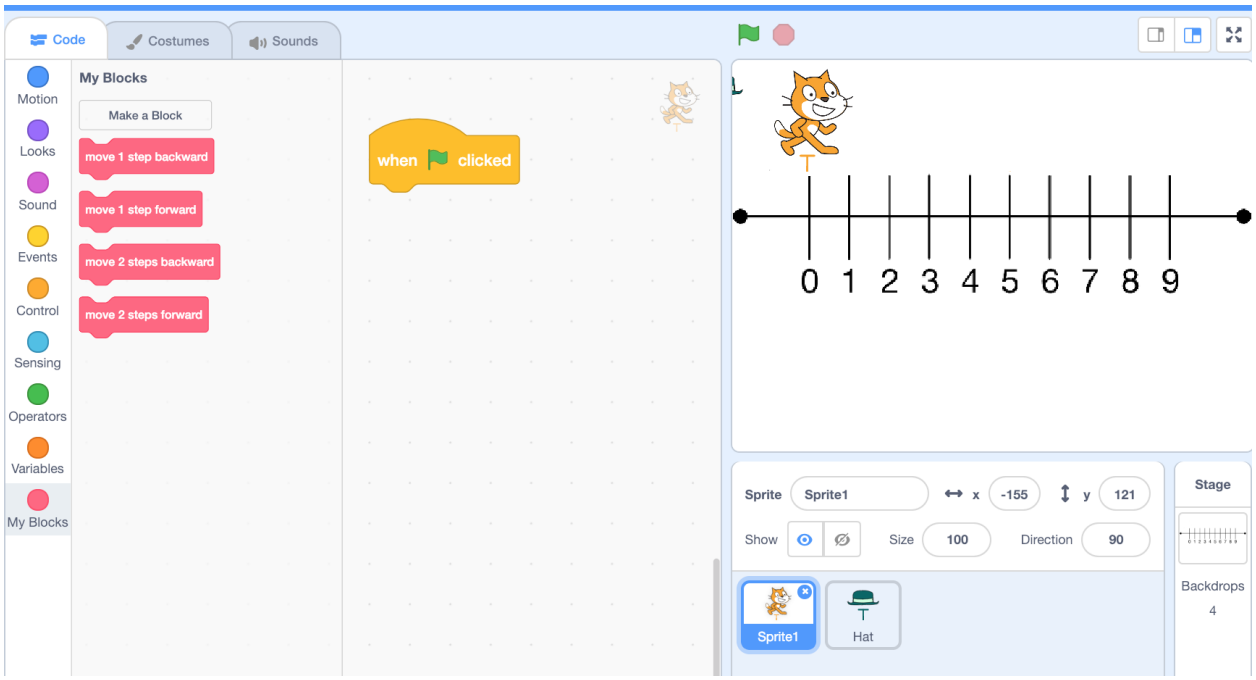
#08

Meta-data

- Item code: S.01.a
- Trajectory: Sequence

Item

8) Create 2 different scripts (sets of instructions) to move the cat so that he stops at 5 on the number line. **Use only the blocks shown above.**



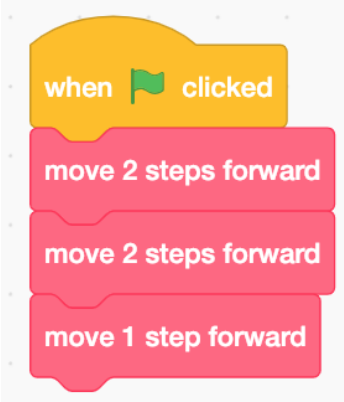
Create 2 different scripts (sets of instructions) to move the cat so that he stops at 5 on the number line. **Use only the blocks shown above.** Write or draw your scripts in the boxes.

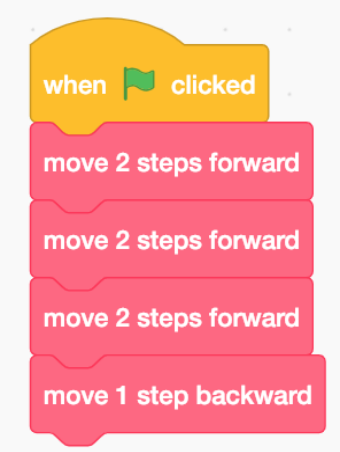
Script A

Script B

Exemplar response(s)

Script A





Script B

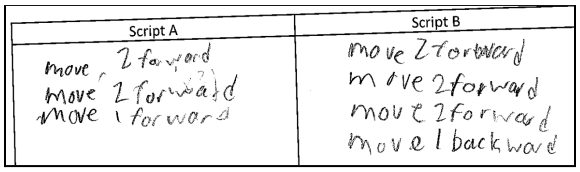
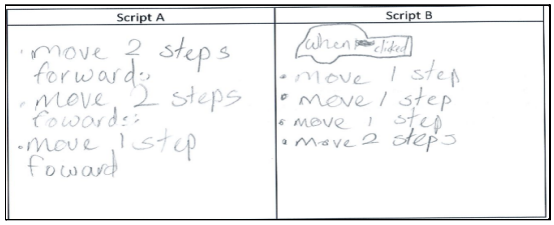
Note: Any combination of forward and backward steps is acceptable as long as the cat stops at 5.

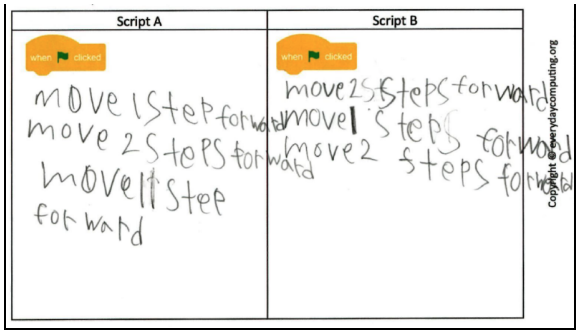
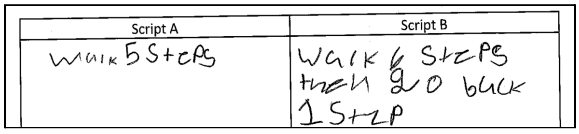
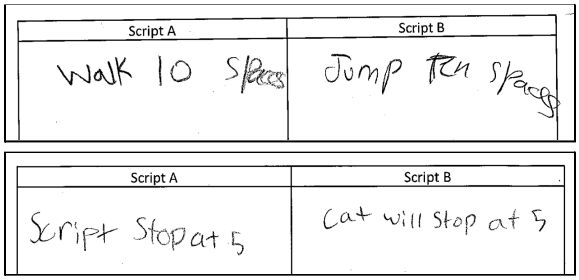
Scoring Guidance

See Rubric

Rubric(s)

This rubric focuses on two important features of this item that relate back to this item's design principles: (1) did the students use the given blocks to achieve the intended outcome and (2) did the students show two different code blocks that would both produce the same intended outcome? The rubric creates different levels of performance based upon those two features.

Score	Description	Example
3	Provides 2 correct ways to get to 5 using the **given*** blocks	 

2	Provides 1 way to get to 5 with the **given*** blocks [Clarification: The students' 2nd way might be correct (but using not given blocks), or might be incorrect (using either given or not given blocks) or might be blank.]	
1	Provides 2 correct ways to get to 5 using blocks that are **not given***	
0	Shows incorrect block usage (cat will not reach Step 5), or provides only 1 way to get to 5 with blocks that are **not given***	

Note. "Given block" means that the student is constrained to using commands that move the cat either 1 or 2 steps, in either a forward or backward direction.

- ***Given blocks** define a limited number of steps and directions. Valid options are 1 step backward; 1 step forward; 2 steps backward; 2 steps forward.
- ***Non-given blocks** would be other blocks (e.g., "repeat 5 times") or blocks that do not use the defined number and direction (e.g., "move 5 steps forward").

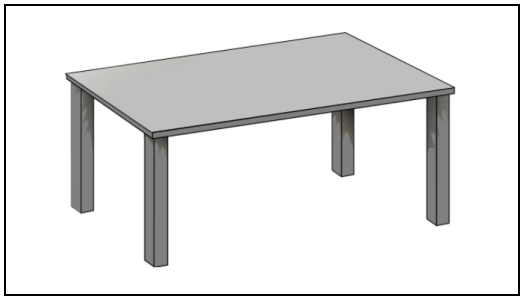
#09

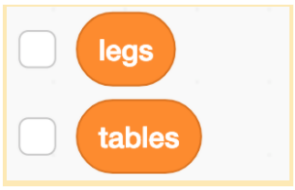
Meta-data

- Item code: V.14.a
- Trajectory: Variables

Item

9) A factory makes tables. Each table has 4 legs. Write instructions to program a computer to ask for the number of tables and then say the number of legs needed. Pretend that the computer has variables named "tables" and "legs."





Your instructions:

Exemplar response(s)

1. Ask for number of tables
2. Set “tables” variable to the answer/ number
3. Set “legs” variable equal to 4 x “tables”
4. Say “legs”

Scoring Guidance

- Code “features” of the student response individually:
    - Feature 1: Student’s instructions ask the user to input a value (e.g., tables) = 1
    - Feature 2: Student’s instructions store a value in a variable (i.e., assignment) = 1
    - Feature 3: Student’s instructions perform a calculation using a variable (e.g., tables x 4) = 1
    - Feature 4: Student’s instructions output the value in a variable (e.g., say legs) = 1

Rubric(s)

None