

# Parts of an Item

- **Item** - all the components that make up a test question
- **Graphics** - static images such as graphs, figures, pictures, etc.
- **Stem** - the text and graphics in the item
- **Distractor** - response options that are incorrect but plausible
- **Key** - response option(s) that is/are correct
- **Question** - part of the item that asks a specific question of the student

## Parts of an Item

A diagram of a plant is shown. ← **Stem**



← **Graphic**

In which part of the plant does photosynthesis take place?

A. Flowers ← **Distractor**

B. Leaves ← **Key**

C. Stems ← **Distractor**

D. Roots ← **Distractor**

**Question**

# Item Types

- Multiple Choice (MC)
  - Items that require students to respond to a stem by selecting one response
- Constructed Response(CR)
  - Items that require students to provide or input their response or responses using a keyboard or keypad
- Technology Enhanced (TE)
  - Items that include computer-based interactions to collect response data
- Multi-Part Selected Response (MPSR)
  - 2-part items in which one part is constructed response and the other part is MC or TE

## Multiple Choice Item Type

- Options should be plausible (NO “throw-aways”).
- Options should avoid unnecessary text.
- Options should be parallel in structure and content.
- Options should avoid using the phrases “all of the above” or “none of the above.”

# Multiple Choice Item Type

Avoid absolutes and “clueing” when possible.

***Poor example:***

What is the source of energy for all ecosystems on Earth?

- A. sugar
- B. gravity
- C. energy from the sun\*
- D. chemicals from deep-ocean vents\*

***Better example:***

What is the source of energy for most ecosystems on Earth?

- A. sugar
- B. sunlight\*
- C. small organisms
- D. hydrothermal vents

## Grade 5 OTT – MC Item

Students are growing the same type of plant in the same environment. Some of the plants have purple flowers, and some of the plants have white flowers. A student claims not all of the plants came from the same parent plants.

*(Practice Hint 1: Use the Cross-Off tool to eliminate options.)*

*(Practice Hint 2: Use the Pointer tool to select an answer.)*

Which argument **best** supports the student's claim?

- (a) Some plant characteristics are inherited from parents.
- (b) Some plant characteristics are inherited from the environment.
- (c) Some plant characteristics are caused by receiving too much water.
- (d) Some plant characteristics are caused by receiving too much sunlight.

# Constructed Response Item Type

- CR items require a student to provide a written/typed response.
- Possible responses for each section of a CR item should be limited; if two parts the parts should be independent of each other.
- Stand-alone CRs are worth 1-4 total points.
- CR items require students to apply and explain instead of only identify or recall knowledge.

# Grade 5 OTT – CR Item

Question 4  
Page 1 of 2



A teacher makes a mixture of iron filings, pebbles, and sand. The teacher asks the students to separate the mixture into each of its three parts.

**Part A:** One student says to add water to the mixture and filter the mixture using filter paper. Explain why this procedure would **not** separate the parts of the mixture.

*(Practice Hint 1: Select the answer box to enter your answer.)*

EQ

0 / 1000

# Grade 5 OTT – CR Item

Question 4  
Page 2 of 2



A teacher makes a mixture of iron filings, pebbles, and sand. The teacher asks the students to separate the mixture into each of its three parts.

**Part B:** Explain how each part can be separated from the mixture.

EQ

0 / 1000

# Technology Enhanced Item Types

- Examples of each technology enhanced item type will be available for reference.
  - Drag and Drop
  - Drop-Down List
  - Graphing: Coordinate graph or bar graph
  - Matching Interaction
  - Hot Spot
  - Text Highlight
  - Multiple Select

# Grade 5 OTT

## Drag and Drop Item

Question 3



Item ID



The chart represents weather that occurs during winter and summer in Missouri. Drag each weather symbol into the chart to show the weather that occurs for each season shown. **Each symbol may be used once or more than once.**

*(Practice Hint: Select the weather symbols and drag them into the correct boxes.)*

?

### Weather Chart

Winter	Summer

  
sunny

  
snowing

  
windy

# Grade 5 OTT

## Drag and Drop Item

Question 3



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*(Practice Hint: Select the weather symbols and drag them into the correct boxes.)*

**Weather Chart**

Winter	Summer
 sunny	 sunny
 snowing	 windy
 windy	



sunny



snowing



windy

# Grade 5 OTT

## Drop-Down List

Question 7



The data table shows information about air temperature and precipitation for an area.

Month	Average High Air Temperature (°F)	Average Low Air Temperature (°F)	Average Precipitation (inches)
January	67	46	0.9
February	71	49	0.9
March	77	53	1.0
April	85	60	0.3
May	95	69	0.1
June	104	78	0.0
July	106	83	1.1
August	104	83	1.0
September	100	77	0.6
October	89	65	0.6
November	76	53	0.7
December	66	45	0.9

Use the drop-down menus to complete the sentences that describe the climate of this area.

*(Practice Hint: Use the Pointer tool to select the arrow in each drop-down menu to select your answers.)*

The warmest month is , and the coldest month is .

This city receives  of precipitation each month.

The climate of this area is most likely a .

# Grade 5 OTT

## Drop-Down Menu

Question 7



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This city receives  of precipitation each month.

The climate of this area is most likely a .

- June
- July
- August

# Grade 5 OTT

## Graphing Item - Line

Question 6



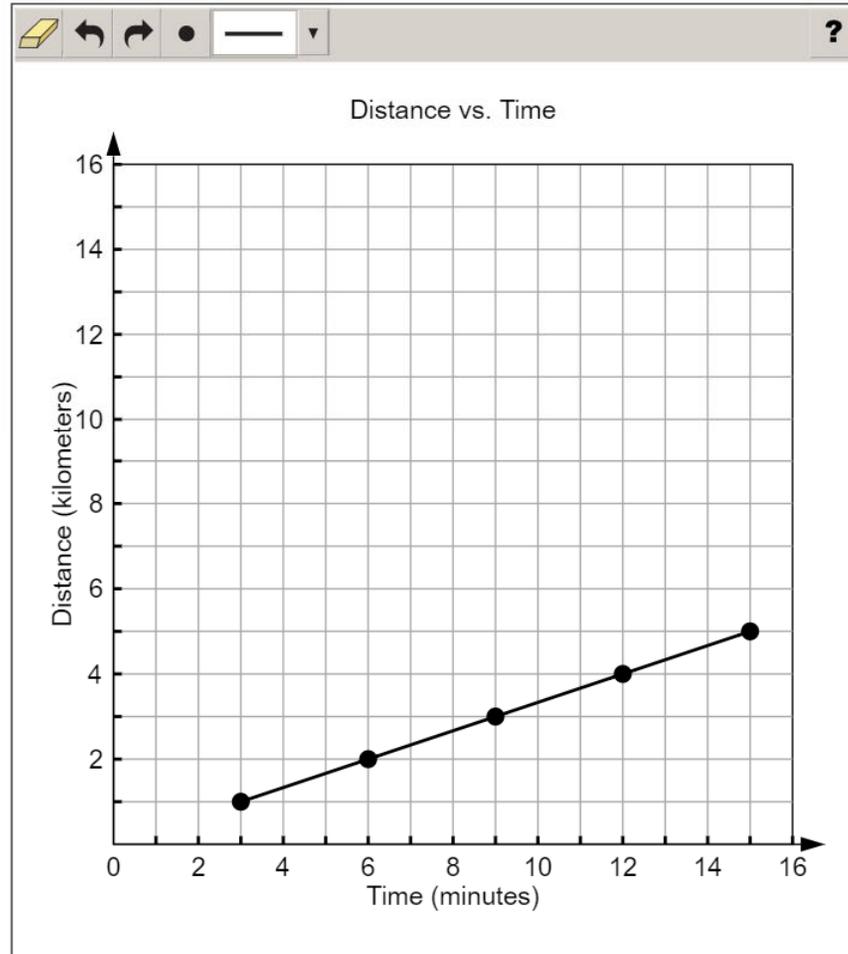
A student rides a bicycle for fifteen minutes but only records the distance traveled for nine minutes of the bike ride.

**Student Bike Data**

Time (minutes)	Distance (kilometers)
3	1
6	2
9	3
12	?
15	?

Make a graph that shows the **most likely** pattern of the student's motion for the **fifteen-minute** bike ride.

*(Practice Hint: Select the Closed Point tool on the top menu bar to plot the 5 points. Then select the Line Segment tool and connect two points by selecting the first point and dragging to the second point.)*



# Grade 5 OTT

## Graphing Item - Bar

*(Practice Hint 2: Use the Sticky Note tool to record information about the investigation you may want to use later.)*

A student is investigating the temperature at which different colors of crayons melt. The student uses the following steps for the investigation.

### Investigation Steps

1. Remove the paper from each crayon, and break each crayon into three pieces.
2. Place the three broken pieces of each color of crayon into a beaker labeled with the crayon color.
3. Place each beaker onto a hot plate set at medium heat.
4. Measure the temperature at which the crayon pieces completely melt.
5. Record the amount of time it takes for each crayon to completely melt.

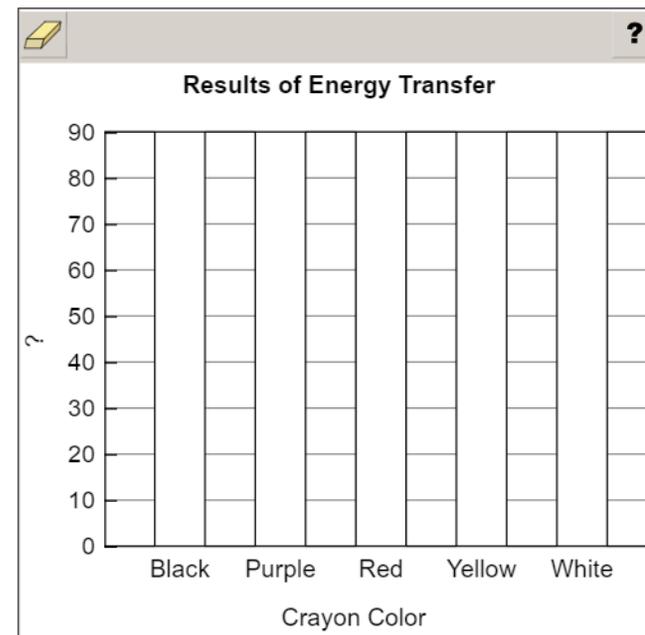
The student's data are shown in the table.

### Investigation Results

Color of Crayon	Mass of Crayon without Paper (grams)	Temperature Crayon Completely Melts (°C)	Time It Takes to Completely Melt (minutes)
Black	25	62	2:25
Purple	25	65	2:54
Red	25	73	3:23
Yellow	25	75	4:12
White	25	80	4:59

**Part B:** Graph the data. Use your Pointer tool to drag the bars to the correct number.

*(Practice Hint: Place the Pointer tool above a crayon color. Move the Pointer tool upward to select a height for each bar.)*



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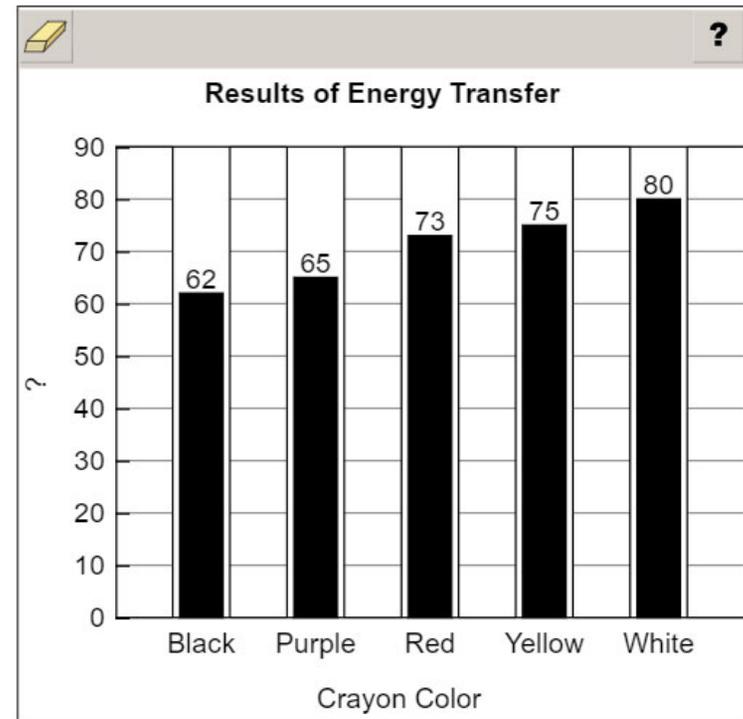
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## Grade 5 OTT – 2 Part Item

### (Matching Interaction and Drop-Down)

This question has two parts.

A student is collecting evidence to make an argument about what plants need to survive.

**Part A:** Match each structure on a rosebush with its function.

*(Practice Hint: Match a structure listed in the first row to a function listed in the first column. Select the box with the Pointer tool and a check mark will appear.)*

	Leaf	Root	Rose Flower	Thorn
makes food for the rosebush	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
helps the rosebush reproduce	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
protects the rosebush from predators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
provides water and minerals to the rosebush	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Part B:** Use the drop-down menus to complete the following claim.

The rosebush has  structures for  functions.

# Grade 5 OTT Hot Spot Item

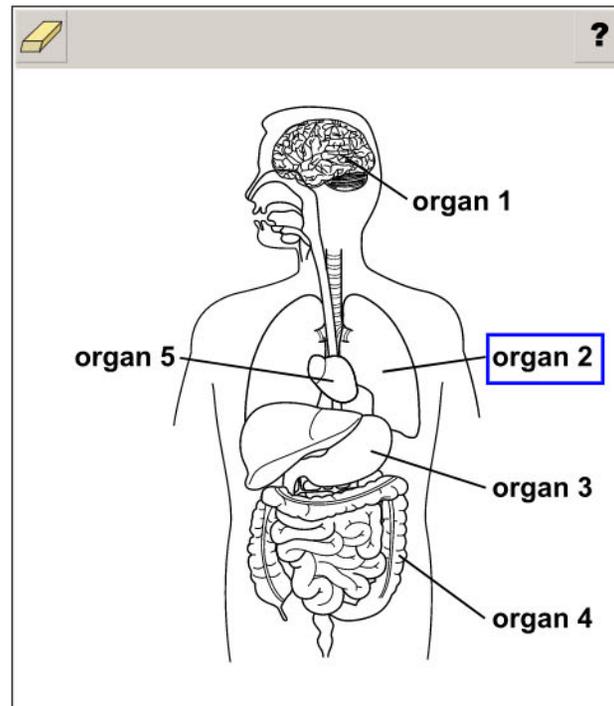
Question 10



Gills, lungs, or skin can be used to exchange oxygen and carbon dioxide in amphibians.

Select the human organ that is **most** responsible for exchanging oxygen and carbon dioxide.

*(Practice Hint: Select a human organ label and a box will appear when selected.)*



# Grade 5 OTT Multi-Select Item

Question 2



*(Practice Hint: Multiple answers can be selected when answering this question.)*

Select **three** statements that help explain why the sun is the brightest object in the sky.

- The sun is a star.
- The sun gives off its own light.
- The sun is the same size as the moon.
- The sun is the largest star in the universe.
- The sun is closer to Earth than any other star.
- The sun is the most massive star in the Milky Way Galaxy.

# Grade 5 OTT

## Multi-Select Item

Question 2



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- The sun is the most massive star in the Milky Way.

**Maximum Selections Reached.**

OK

# Grade 5 OTT – 2 Part Item

## (Drag and Drop and Multi-Select)

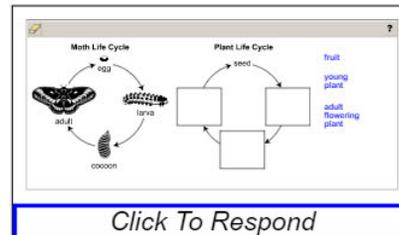
Question 8



This question has two parts.

**Part A:** The diagrams show a moth life cycle and an incomplete plant life cycle. Drag the labels into the correct place in the diagram that shows the life cycle of a plant.

*(Practice Hint: Below the picture, select the “Click to Respond” button to answer the question.)*



**Part B:** Select **two** similarities between the moth life cycle and the plant life cycle shown.

- show growth
- start as seeds
- produce fruit
- go through metamorphosis
- have the same number of stages

# Grade 5 OTT – 2 Part Item

## (Drag and Drop and Multi-Select)

The diagram is presented in a software window with a blue header bar containing a question mark icon. Below the header is a toolbar with an eraser icon and another question mark icon. The main content area is divided into two sections:

- Moth Life Cycle:** A circular diagram showing four stages: **egg** (represented by a small oval), **larva** (represented by a caterpillar), **cocoon** (represented by a striped oval), and **adult** (represented by a moth). Arrows connect the stages in a clockwise cycle: egg to larva, larva to cocoon, cocoon to adult, and adult back to egg.
- Plant Life Cycle:** A circular diagram with three stages shown: **seed** at the top, **fruit** on the right, and an empty box at the bottom. Arrows connect them in a clockwise cycle: seed to fruit, fruit to the empty box, and the empty box back to seed. To the right of this diagram are two labels: **young plant** (in blue text) and **adult flowering plant** (in black text).

At the bottom center of the window is a blue button with the text **OK**.

# Grade 5 OTT – 2 Part Item

## (Drag and Drop and Multi-Select)

**Part B:** Select **two** similarities between the moth life cycle and the plant life cycle shown.

- show growth
- start as seeds
- produce fruit
- go through metamorphosis
- have the same number of stages

# Multi-Part Selected Response (MPSR) Item Type

- Consists of more than one part
- Each part is MC, TE, or constructed response.
- The parts should be connected in a logical way.
- Can be worth 2-4 total points.
- MPSR items require students to apply and explain instead of only identify or recall knowledge.

# Grade 5 OTT – MPSR Item

Question 4  
Page 1 of 2



A teacher makes a mixture of iron filings, pebbles, and sand. The teacher asks the students to separate the mixture into each of its three parts.

**Part A:** One student says to add water to the mixture and filter the mixture using filter paper. Why would this procedure **not** separate the parts of the mixture?

- (a) The sand is dissolved in the mixture.
- (b) The pebbles are heavier than the iron filings or the sand.
- (c) The iron filings and sand are magnetically attracted to each other.
- (d) The iron filings, pebbles, and sand are all too large to fit through filter paper.

**Part B:** Explain how each part of the mixture from Part A can be separated.

EO