Cognitive Abilities Test™
Practice Activities
Teacher Guide

Form 7

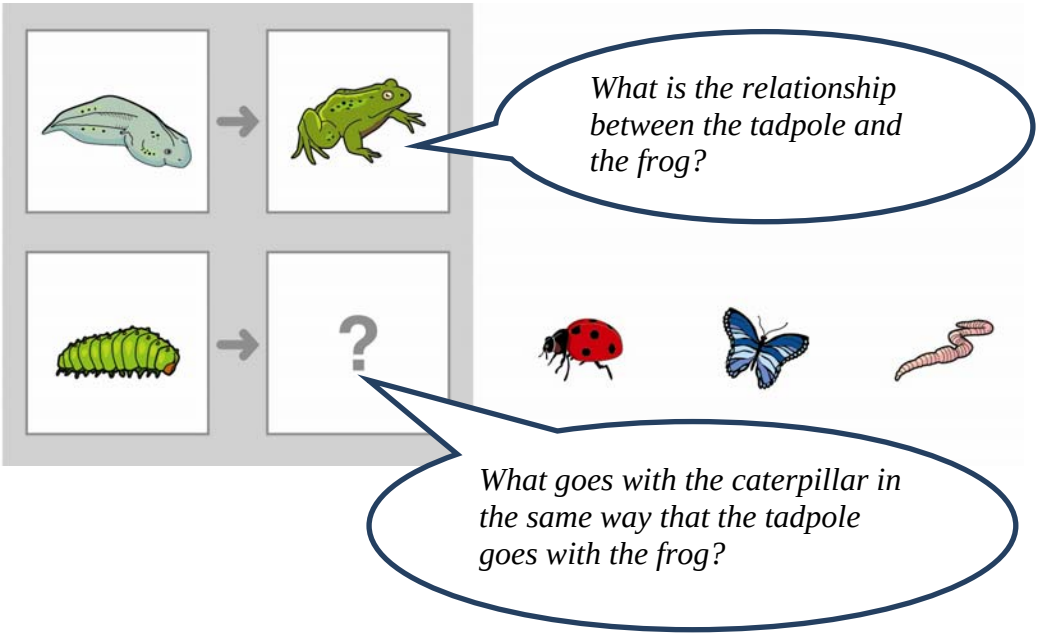
CogAT®

Test 1: Picture Analogies, Level 8

Part 1: Overview of Picture Analogies

An analogy draws parallels between objects or ideas. Analogies can be about simple concepts such as “Brothers are boys just like sisters are girls” or complex concepts such as “Friendships are like glass. Once broken, they are difficult to restore.” Successful learners habitually reason by analogy. Good analogies allow them to use what they already know when they are trying to understand new ideas. In the Picture Analogies test, reasoning by analogy requires finding ways in which two things are similar and using these similarities to create a second pair of objects or ideas that are like each other in the same way.

In this test, students are asked to solve analogies that look like this:



When practicing the Picture Analogies questions, encourage students to use these strategies.

- Describe, in words, ideas about how the first picture relates to the second picture. For example, a tadpole grows into a frog.
- Test the idea by applying it to the third figure to generate a possible answer. Then look for that answer among the answer choices.
- Look for a different, more precise rule if more than one answer choice fits the rule.

Students at this level tend to make the following common mistakes.

- Students may ignore the relationship between the first two pictures and simply choose an answer they associate with the third picture. For example, in the sample question above, the student might choose the worm because it looks like the caterpillar.

- Students might examine only some of the answer choices and then choose one that partially satisfies the analogy. For example, suppose that one of the options were a larger caterpillar. Small caterpillars do grow into larger caterpillars. This would correctly capture the idea of growth. But the frog is not just a large tadpole. A frog looks very different than a tadpole, so the butterfly would still be the best answer.

Part 2: Picture Analogies Practice Test Script

The following script covers many issues that will help students do their best on the test. Read aloud the text printed in *blue italics*: these are directions to the students. Directions for you are in parentheses and should NOT be read aloud. Feel free to modify the script to ensure that students understand what they are supposed to do and how to do it.

It may be helpful to make copies of the practice questions in order to display them one at a time on an overhead projector. If this is not possible, hold up a copy of the student practice booklet and point to different parts of each practice question as you discuss them with the class.

(Make sure each student has a practice booklet. Then **SAY**:)

*Open your practice booklet to page 1. You should be on the page with the **stars** across the top.*

(Check that all students have the correct page.)

P1

Look at the first practice question. Listen carefully while I answer this practice question. I will tell you how I answer the question so you will know how to answer questions like this one.

(Point to the big box that has pictures inside of it as you **SAY**:)

Each question has a big box with three pictures and a box with a question mark.

(Point to the box with the question mark.)

You must decide which one of three answer pictures goes in the box with the question mark.

First I'll look at the pictures in the top row of the big box. The arrow between them means that the two pictures in the top row go together in some way.

(Point to the man and the house in the top row as you **SAY**:)

How do the man and the house go together?

The man could have built the house. Or he could live in the house.

Next, look at the picture in the bottom row of the big box. It shows a bird. The arrow shows the bird is connected to something else in the same way that the man is connected to the house.

Let's name the answer pictures. There's a tree, a birdbath, and a birdhouse.

Which answer picture goes with the bird in the same way that the house goes with the man?

Could the answer be the tree? The tree might be a good answer because it is one of the places that a bird lives. But I do not see a nest in the tree.

Could it be the birdbath? The birdbath is not the answer because birds do not live in birdbaths. They only drink and play in them.

The birdhouse is the best answer because the bird could live inside of it, just like the man could live inside of the house. Also, both homes are built by people.

Do you see how I figured out the answer?

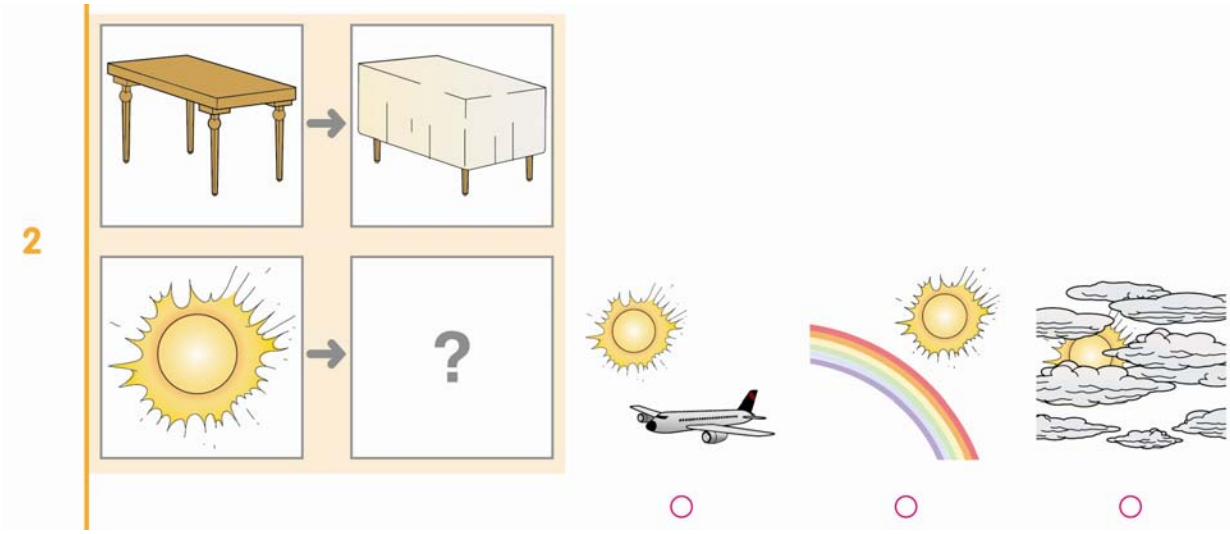
(Make sure students understand what they are supposed to do and clarify any confusion.)

Now fill in the circle under the birdhouse to show that it is the best answer.

(Check to make sure that all students have filled in the third circle.)

P2

Let's answer the next practice question together.



(Hold up a practice booklet and point to the top row as you **SAY**:)

Look at the pictures in the top row of the big box. What does the first picture show?

It shows an empty table.

(Point to the second picture.)

The second picture shows the table covered with a table cloth. So, what changed between the first picture and the second picture?

(Encourage responses.)

The empty table was covered with a table cloth. Did you see the arrow? (Point to the arrow.)

Now look at the first picture in the bottom row. What does this picture show?

(Encourage responses. Then point to the sun as you **SAY**:)

It shows a sun in the sky. This picture must change in the same way that the empty table changed. How did the table change?

(Encourage responses.)

It was covered up. How can we cover up the sun? We can't put a table cloth over it. Which answer picture shows something covering the sun?

(Encourage responses. If someone chooses the correct answer, the sun with the clouds, **SAY**:)

That's correct. The last answer picture shows clouds in the sky covering the sun. The clouds cover the sun like the table cloth covers the table.

(If someone chooses the sun with the airplane, **SAY**:)

Does the airplane cover the sun? No. The plane is close to the sun in the picture. It does not cover it.

(If someone chooses the sun with the rainbow, **SAY**:)

Does the rainbow cover the sun? The rainbow is close to the sun, but it does not cover it.

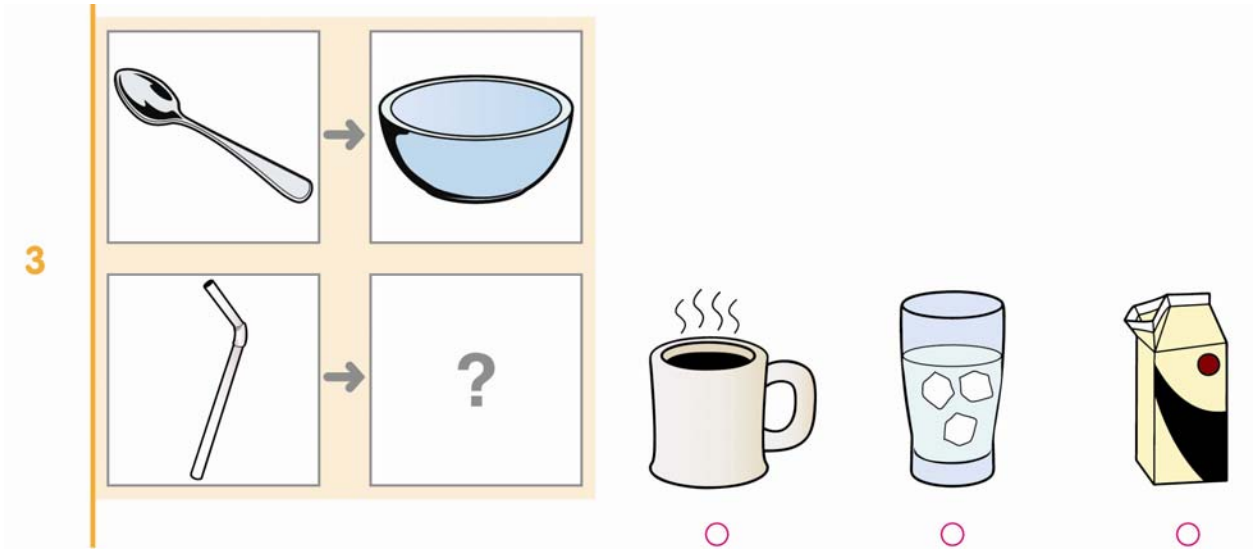
(Point to the third answer choice as you **SAY**:)

Fill in the circle under the clouds covering the sun to show that it is the best answer.

(Check to make sure that all students have filled in the third circle.)

P3

Let's answer the next practice question together.



You must decide which answer picture goes in the box with the question mark.

(Point to the spoon and the bowl in the top row as you **SAY**:)

How do the spoon and bowl go together?

(Encourage responses.)

We use a spoon to eat out of a bowl. Now look at the picture in the bottom row. What do we use a straw for?

(Encourage responses.)

We use a straw to drink something.

Now look at the answer pictures. What are the choices?

(Point to each of the answer choices as you **SAY**:)

There is a cup of coffee, a glass of ice water, and a carton of milk. Which picture do you think goes with the straw in the same way that the spoon goes with the bowl?

(Encourage responses. If someone chooses the glass of water, **SAY**:)

The glass of ice water is the best answer because you use a straw to drink water from a glass.

(If someone chooses the cup of coffee, **SAY**:)

The cup of coffee is not the best answer because you would not use a straw when you drink something hot. You could burn your mouth.

(If someone chooses the carton of milk, **SAY**:)

This is not the best answer because we usually do not drink out of a large milk carton.

Fill in the circle under the glass of ice water to show it is the correct answer.

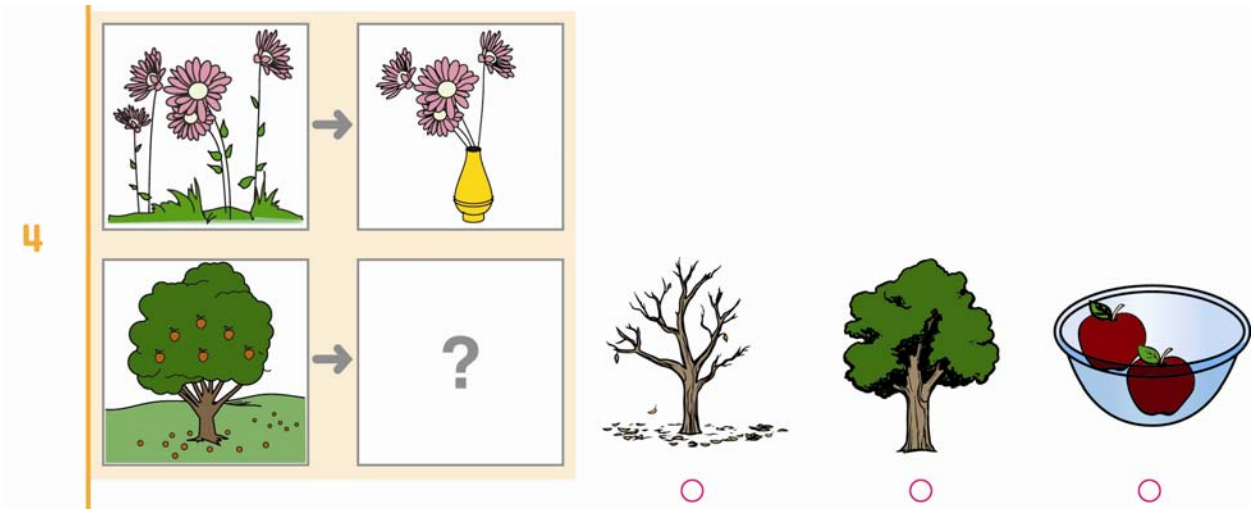
(Check to make sure that all students have filled in the second circle.)

*Turn to the next page. You should be on the page with the **clouds** across the top.*

P4

Look at the next practice question. I want you to try this one by yourself. Think about how the first two pictures are like each other. When you think you know, look at the picture in the bottom row of the big box. One answer should go with this picture. If more than one answer works or if none of them work, go back and look at the first row again. Try to think of another way that the pictures in the top row go together. When you find the best answer, fill in the circle under that answer picture.

(Make sure students have enough time to solve the problem on their own.)



(Point to the flowers in the top row as you **SAY**:)

How did the flowers change from the first picture to the second picture?

(Encourage responses.)

Someone picked the flowers and then put them into a vase.

What is the picture in the bottom row of the big box?

(Encourage responses.)

It is an apple tree with apples on it.

Look at the three answer pictures. Which answer picture is the best answer?

(Encourage responses. If someone chooses the bowl of apples, **SAY**:)

Why is that the best answer?

If we pick flowers and put them in a vase, what could we do to the apple tree? We could pick the apples and put them in something. Apples don't go in a vase (like flowers), but they do go in a bowl. The bowl of apples is the best answer.

Why is the tree without leaves not the best answer? The flowers did not lose their petals.

Why is the tree without apples not the best answer? The flowers did not disappear, so the apples should not disappear either.

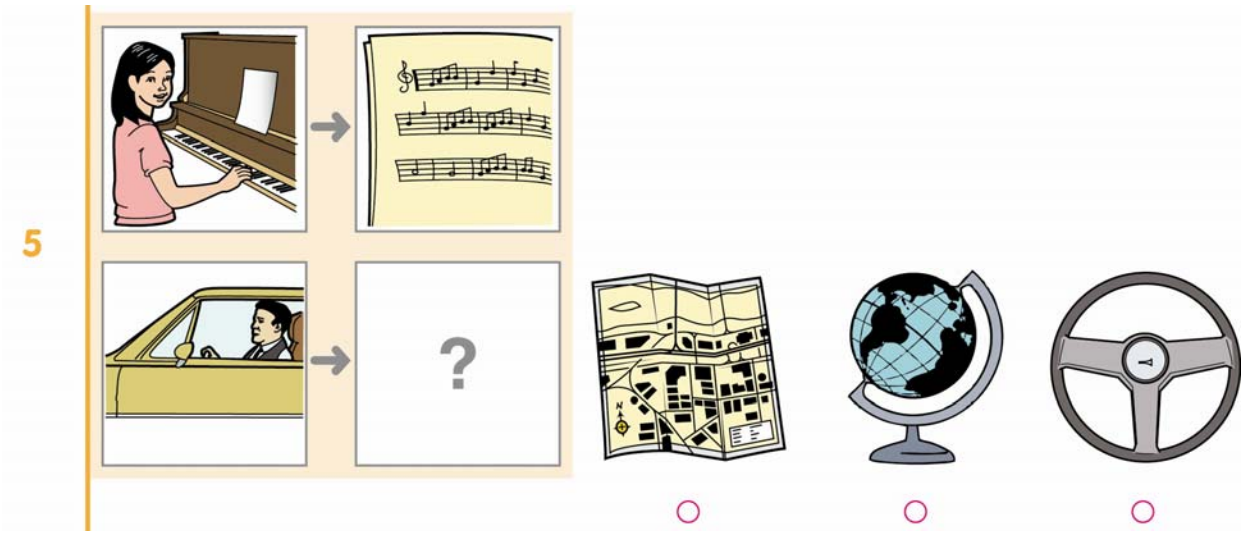
Fill in the circle under the bowl of apples to show that it is the correct answer.

(Check to make sure that all students have filled in the third circle.)

P5

Look at the next practice question. Try to solve this practice question on your own.

(Make sure students have enough time to solve the problem on their own. Then **SAY**:)



Which answer picture is best?

(Encourage responses. If someone chooses the map, **SAY**:)

You are correct. Why is the map the best answer?

(Encourage responses.)

The sheet music tells the girl what to play on the piano. The map tells the driver where to go when he is driving.

(If someone chooses the globe, **SAY**:)

The globe does not give driving directions like a map does.

(If someone chooses the steering wheel, **SAY**:)

The driver uses the steering wheel to drive, but the steering wheel does not give the driver driving directions.

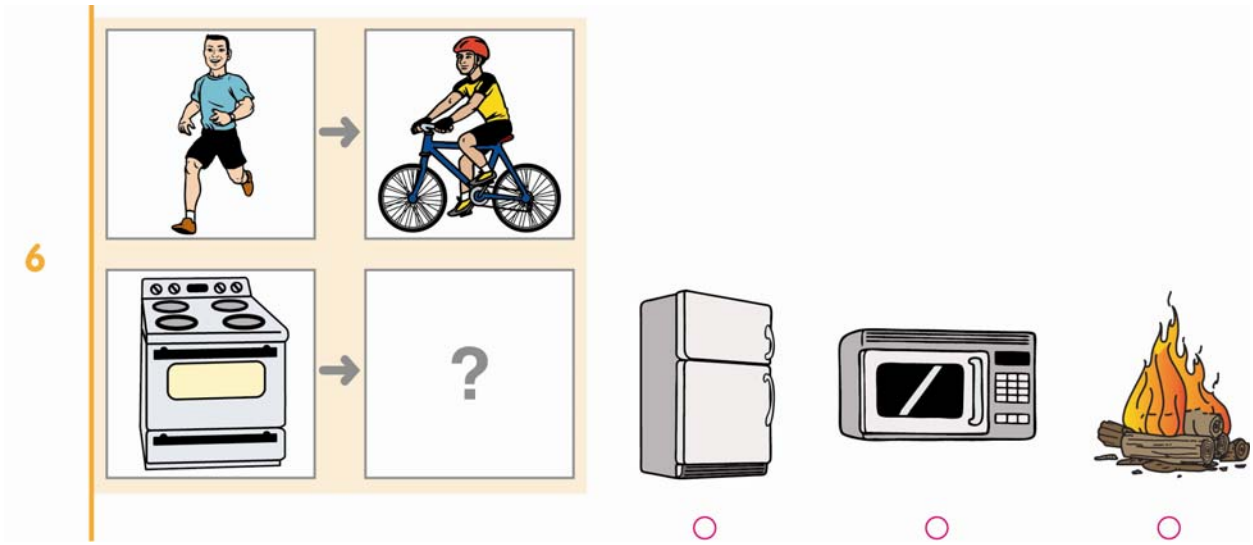
Fill in the circle under the map to show that it is the correct answer.

(Check to make sure that all students have filled in the first circle.)

P6

Look at the last practice question. Try to solve this practice question on your own.

(Make sure students have enough time to solve the problem on their own. Then **SAY**:)



Which answer picture is best?

(Encourage responses.)

How did you answer this question?

(Encourage responses. If there are students who don't understand how to solve this question, go through the process as follows.)

How do the runner and the biker go together?

(Encourage responses.)

Who can move faster, the runner or the biker? The biker. Also, the biker is using a machine—the bicycle. Which answer picture goes with the stove in the same way? The stove cooks food, so we need something that cooks food faster.

Is the refrigerator the best answer? The refrigerator does not help us cook, so it is not the best answer.

Is the fire the best answer? The fire could cook food, but you would have to get the wood and build the fire. So building a fire would not be as quick as a stove or a microwave.

(Check to make sure that students understand this reasoning. You might also explain how fire does not use technology, so it is not an advanced technology from the oven, as the man riding the bicycle is to the man running.)

Is the microwave the best answer? A microwave can cook faster than a stove, and it uses more advanced technology. It is the best answer.

Fill in the circle under the microwave to show that it is the best answer.

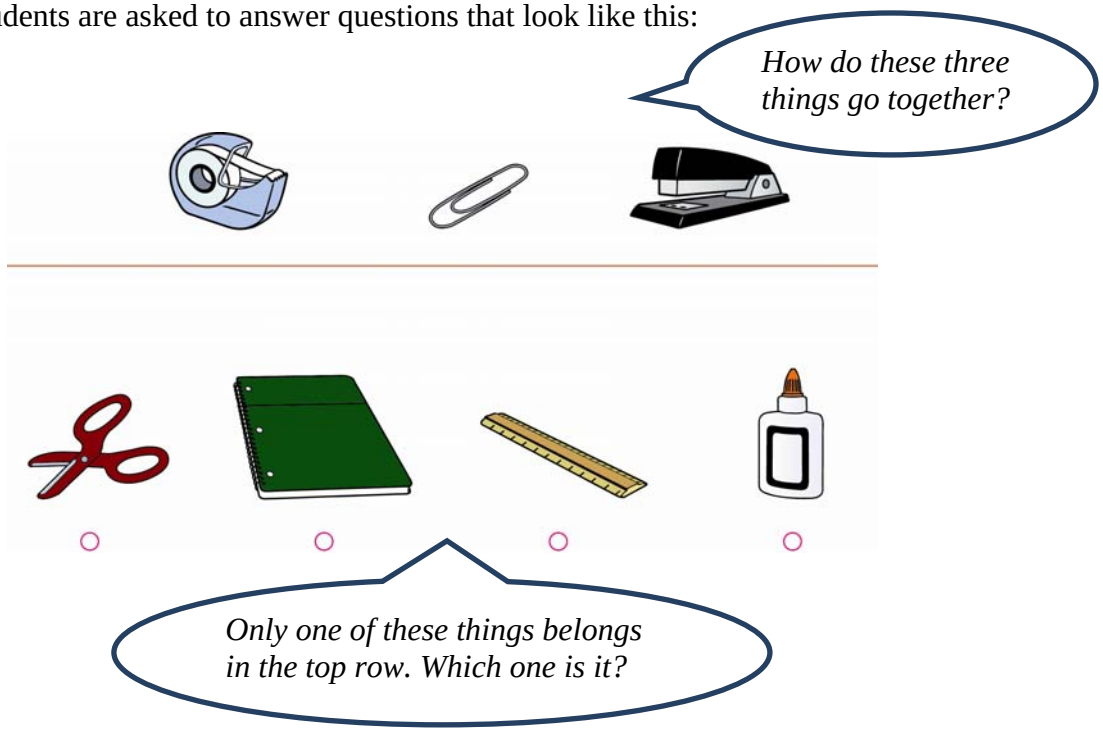
(Check to make sure that all students have filled in the second circle.)

Test 3: Picture Classification, Level 8

Part 1: Overview of Picture Classification

The Picture Classification test requires students to infer how three objects are like each other and then select an additional object that is like the first three. Making good inferences is essential for learning new words, developing reading-comprehension skills, and advancing math problem-solving skills. Teaching students strategies for making better inferences will improve their skills in these and many other domains.

In this test, students are asked to answer questions that look like this:



When practicing the Picture Classification questions, encourage students to use these strategies.

- Think of a rule that describes the similarities among the first three pictures. For example, all of the objects hold things together.

- Test the rule on each answer choice, eliminating answer choices that do not fit the rule. Only one answer choice should fit the inferred rule.

- Look for a more precise rule if more than one answer choice fits the rule. It is important to find the rule that most precisely describes the objects. For example, “pets” is more precise than “animals,” and “dresses” is more precise than “clothing.”

Students at this level tend to make the following common mistakes.

- Students might select an object that reminds them of one of the pictures in the top row, often relying only on appearance. For example, in the sample question above, the student may choose the scissors because it looks like the stapler.

- Students may find a broad category that fits more than one answer choice and not go back to look for a narrower category. For example, “school supplies” describes all of the answer choices in the question above, so a more precise rule is required.

Part 2: Picture Classification Practice Test Script

The following script covers many issues that will help students do their best on the test. Read aloud the text printed in *blue italics*: these are directions to the students. Directions for you are in parentheses and should NOT be read aloud. Feel free to modify the script to ensure that students understand what they are supposed to do and how to do it.

It may be helpful to make copies of the practice questions in order to display them one at a time on an overhead projector. If this is not possible, hold up a copy of the student practice booklet and point to different parts of each practice question as you discuss them with the class.

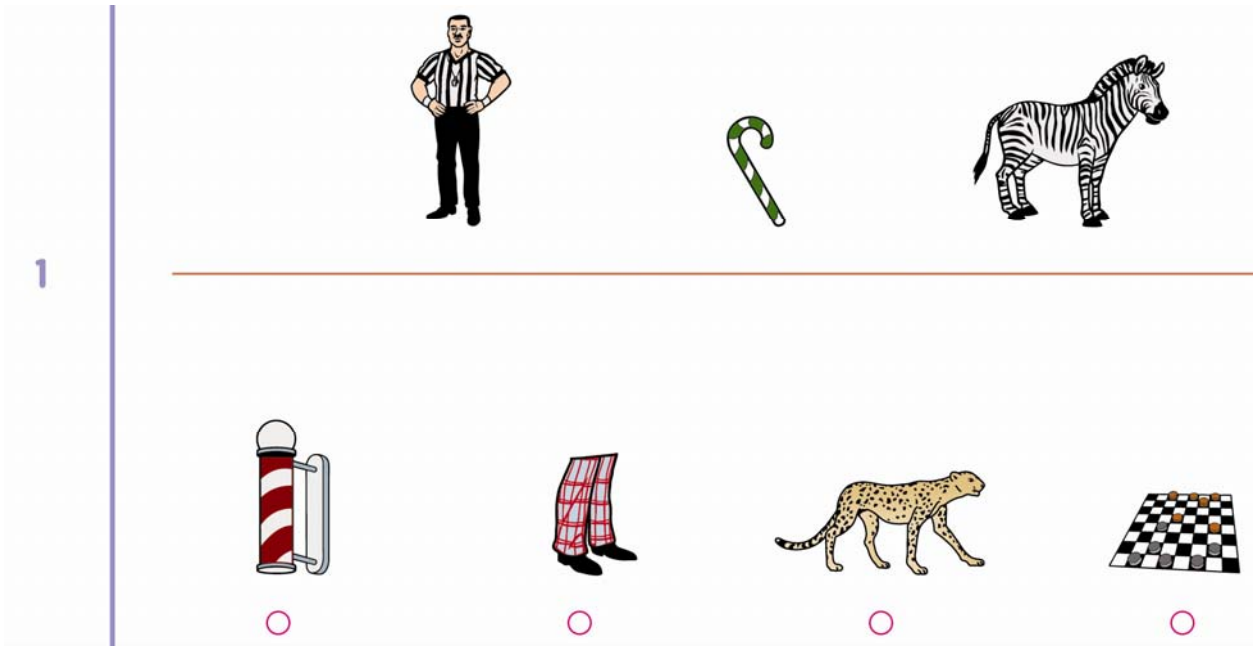
(Make sure each student has a practice booklet. Then **SAY**:)

*Open your practice booklet to page 3. You should be on the page with the **shoes** across the top.*

(Check that all students have the correct page.)

P1

Look at the first practice question.



Each practice question has two rows of pictures. The pictures in the top row are like each other in some way. You must decide which picture in the bottom row is like the pictures in the top row.

Listen carefully while I answer this question. I will tell you how I answer the question so you will know how to answer questions like this one.

First I'll need to name the pictures in the top row. Can you help me?

(Encourage responses.)

There is a referee, a candy cane, and a zebra. How are these pictures the same?

(Encourage responses. If someone says that all of them have stripes, **SAY**:)

You're right. The referee has stripes on his shirt, the candy cane is striped, and the zebra has stripes. All of the pictures in the top row have stripes.

What pictures do you see in the bottom row?

(Encourage responses and say the names of the pictures aloud.)

There is a pole, a pair of pants, a cheetah, and a checker board. Which picture in the bottom row goes best with the pictures in the top row?

(Encourage responses. If someone chooses the pole, **ASK**:)

Why did you choose the pole?

(Encourage responses.)

The pole also has stripes, and that's why it is the best answer.

(If someone chooses the pants, cheetah, or checker board, **SAY**:)

I don't think that is quite right. Does it have stripes?

(Pause. You may need to explain how the pants have a plaid, or checked, pattern.)

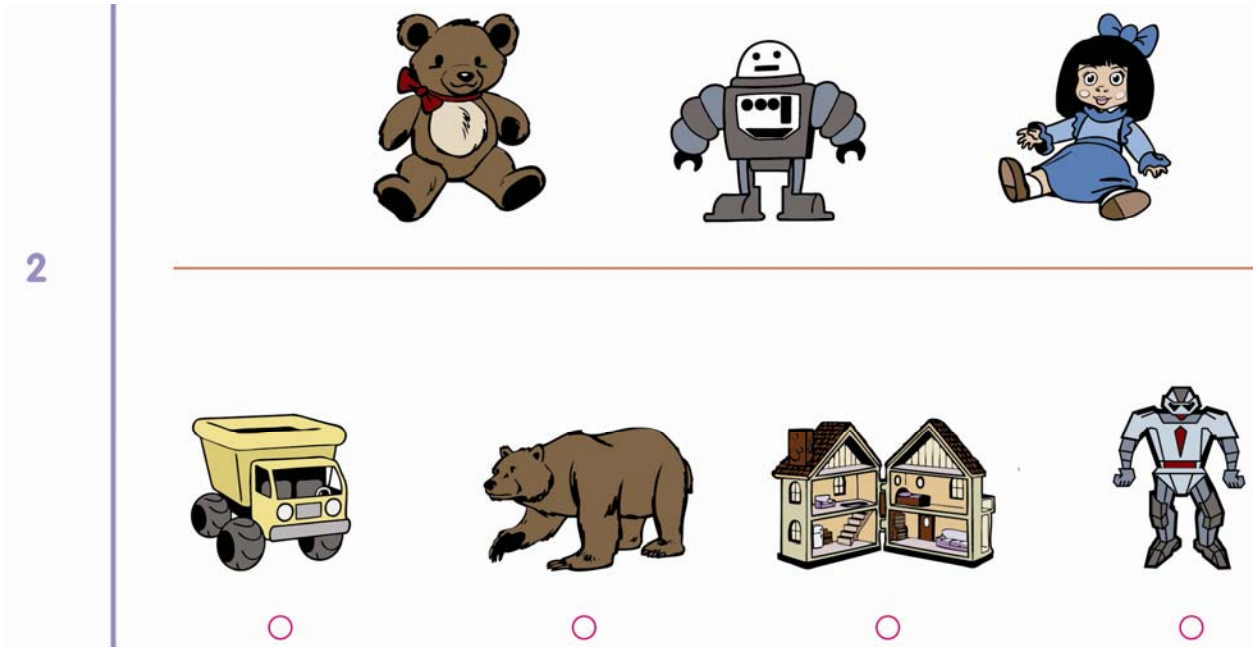
We must find the picture that goes best with the pictures in the top row. All of the pictures in the top row have stripes, so the one we choose must also have stripes.

Now, fill in the circle under the picture of the pole to show that it is the best answer.

(Check to make sure that all students have filled in the first circle and clarify any confusion.)

P2

Look at the next practice question. This one will be a little harder. We must look for a way in which all the pictures in the top row are like each other.



What are the pictures in the top row?

(Encourage responses and say the names of the pictures aloud.)

The top row has a teddy bear, a toy robot, and a doll. How are these things the same?

(Encourage responses and conversation about how they are the same. For example, they are all toys. And they are all toys with heads, arms, and legs.)

Now look at the pictures in the bottom row. What do you see?

(Encourage responses. Then **SAY**:)

The bottom row shows a toy truck, a real bear, a doll house, and an action figure. Which picture in the bottom row goes best with the pictures in the top row?

(Encourage responses. When a student provides a response, **ASK**:)

Why do you think that goes with the teddy bear, the toy robot, and the doll?

(If someone chooses the correct answer, the action figure, **SAY**:)

You chose the action figure because it is a toy with a head, arms, and legs like the other toys in the top row. You're right. That is the best answer.

(If someone chooses an incorrect answer, **SAY**:)

Well, the ____ is not a toy with a head, arms, and legs like the other toys in the top row, so it is not the best answer.

Fill in the circle under the picture of the action figure to show that it is the best answer.

(Check to make sure that all students have filled in the fourth circle and clarify any confusion.)

*Turn to the next page. You should be on the page with the **ladders** across the top.*

P3

Look at the next practice question.

First, I'll look at the pictures in the top row. There is a baseball bat, a golf club, and a hockey stick. Let me think now, how are these three things like each other?

All of the pictures are long and skinny like sticks. But is there another way that they are the same? Let me think.

(Pause.)

I know, all of them are also used in sports. Maybe that's the right answer. Let me look at the answer pictures in the bottom row.

Well, the cane is long and skinny, so it could work. But I should look at all of the answer pictures before picking one.

The second picture is a baseball. A baseball is used in a sport, so it is a possibility.

The next picture shows a tennis racket. A tennis racket is also used in a sport. I probably need to look at how the things in the top row are like each other again. But first I'll look at the last answer picture.

It is a basketball hoop, which is also used in a sport. Now I really need to look at what makes the pictures in the top row go together.

So, the baseball bat, the golf club, and the hockey stick are all used in sports. What else do they all do?

I know! All of them are used to hit something while playing the sport. We use a bat to hit a baseball, a golf club to hit a golf ball, and a hockey stick to hit a puck.

Now I should look at the answer pictures in the bottom row again.

(Point to the answer choices as you **SAY**:)

The cane is wrong because it is not used to hit something in a sport. A baseball is not used to hit something in a sport either. So that is wrong too. What about the tennis racket? A tennis racket hits tennis balls. That must be the right answer.

I'm going to look at the last picture again just to make sure the tennis racket is the best answer. A basketball hoop GETS hit by a basketball, but it doesn't HIT something in the same way that the bat, golf club, hockey stick, and tennis racket do.

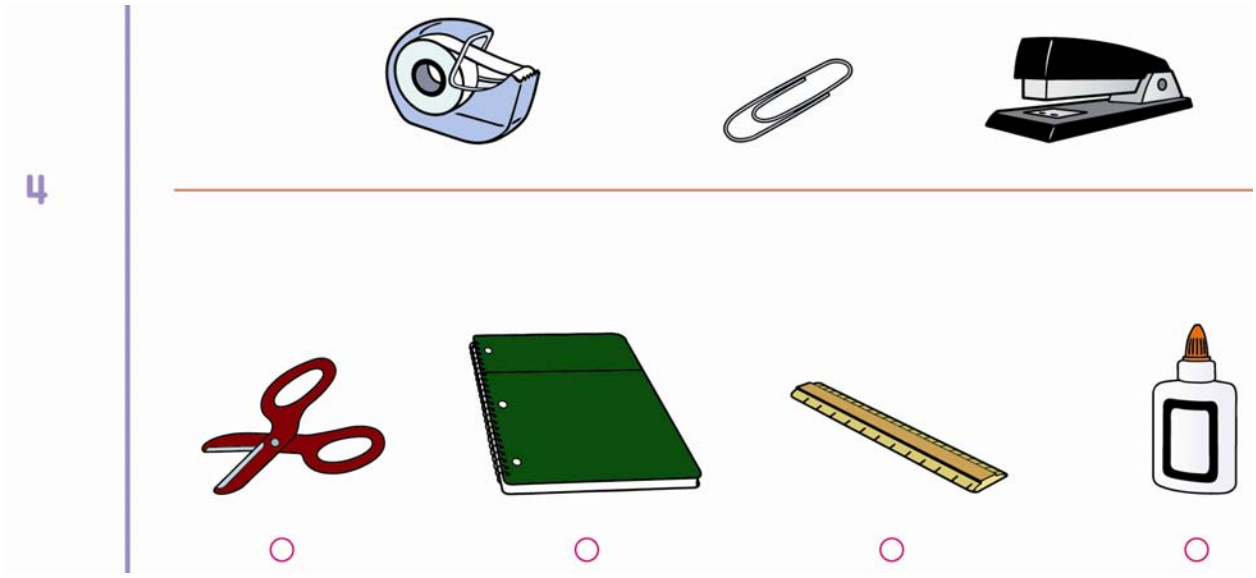
I think the tennis racket is the best answer, so I am going to fill in the circle under the tennis racket. Do you understand why I chose the tennis racket?

(Check to make sure that all students have filled in the third circle and clarify any confusion.)

P4

Look at the next practice question. I want you to answer it by yourself. Think about how we use each thing in the top row. When you have decided, look at the bottom row. Only one thing in the bottom row is used in the same way as the things in the top row. If you think more than one thing is used in the same way, look for another way that the pictures in the top row are like each other. When you find the answer, fill in the circle below the picture of the answer.

(Make sure students have enough time to solve the problem on their own. Then **SAY**:)



How are the three pictures in the top row like each other?

(Encourage responses. If there are students who don't understand how to solve the question, go through the process as follows.)

How do we use tape? What do we do with paper clips? What can we do with a stapler?

(Allow students to respond.)

What is something that all of these things do?

(Encourage responses. The correct *response* is something like "hold things together." Wait for a correct answer, then **SAY**:)

Which item in the bottom row also holds things together?

(Encourage responses. If someone chooses the correct answer, the glue, **SAY**:)

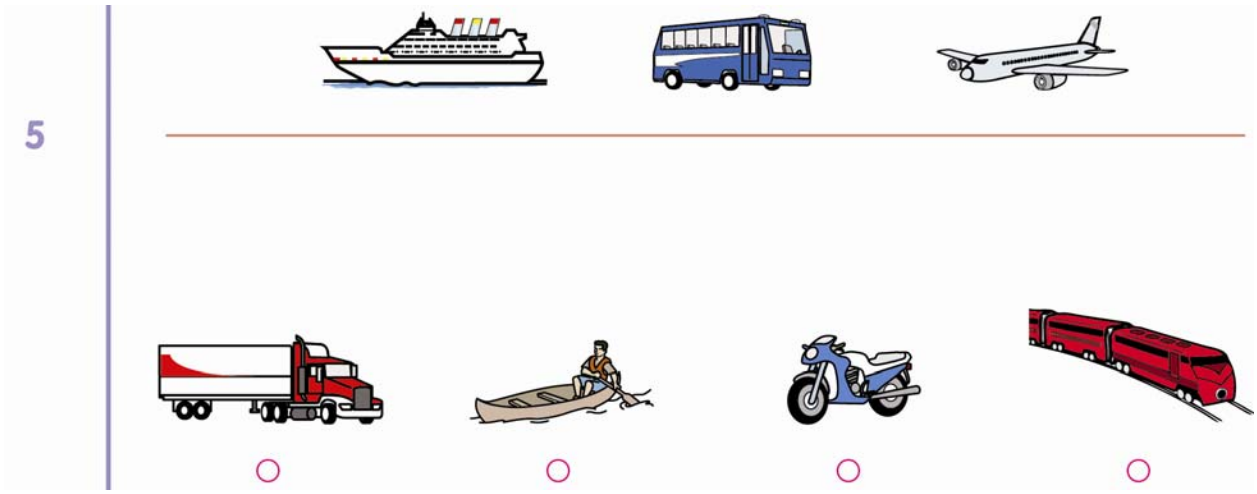
You are correct. The bottle of glue is the best answer because it can hold things together, just like the tape, the paper clip, and the stapler. Fill in the circle under the glue to show that it is the best answer.

(Check to make sure that all students have filled in the fourth circle. If necessary, explain why other answers are not as good as the glue. Look for evidence of using simple associations or categories such as "school supplies" that are too general.)

*Turn to the next page. You should be on the page with the **kites** across the top.*

P5

Look at the next practice question. Try to solve this practice question on your own.



(Make sure students have enough time to solve the problem on their own. Then **SAY**:)

How are the three pictures in the top row like each other?

(Encourage responses. If there are students who don't understand how to solve the question, go through the process as follows.)

All of the pictures in the top row are things that carry lots of people from place to place. The cruise ship lets many people travel by water. The bus takes many people around town. And the airplane flies many people from one airport to another.

Which picture in the bottom row belongs in the same group?

(Encourage responses. If someone chooses the correct answer, the train, **SAY**:)

You are correct. The train is the best answer because it takes lots of people from place to place.

(If someone chooses an incorrect answer, **SAY**:)

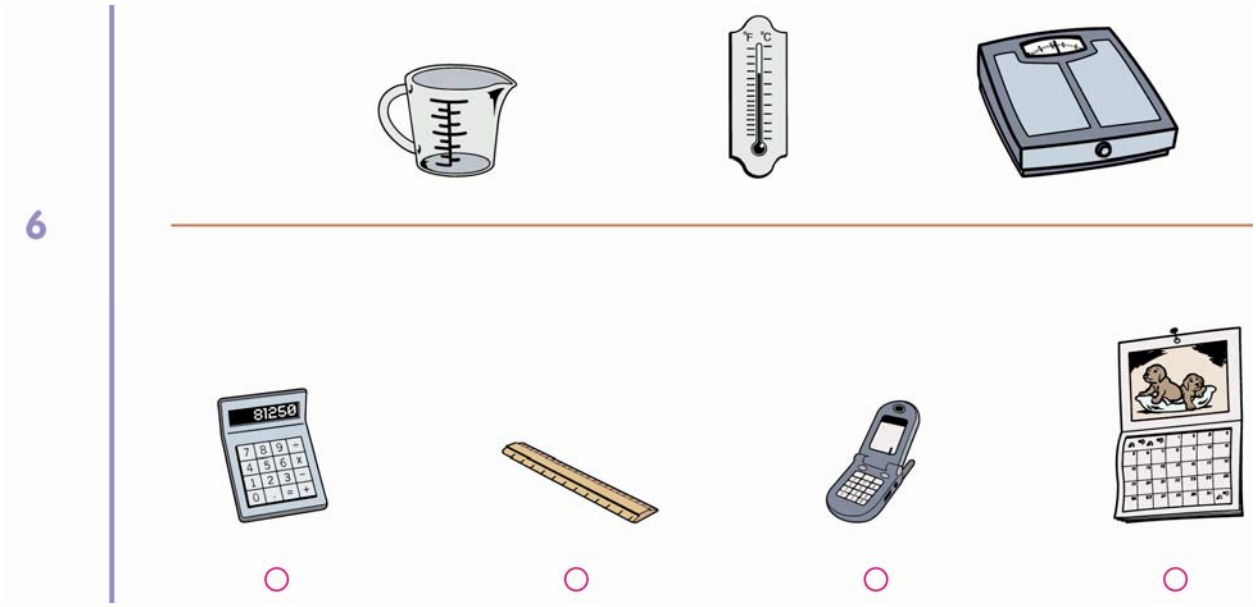
Well, the ____ isn't the right answer because it does not transport many people at once like the ship, bus, airplane, and train do.

Fill in the circle under the train to show that it is the best answer.

(Check to make sure that all students have filled in the fourth circle. If necessary, explain that examining all options is part of discovering the rule. For example, the semi, the canoe, and the motorcycle are all forms of transportation. But all of the options are modes of transportation, so that rule is too general.)

P6

Look at the last practice question. Try to solve this practice question on your own.



(Make sure students have enough time to solve the problem. Then **SAY**:)

How are the three pictures in the top row like each other?

(Encourage responses. If there are students who don't understand how to solve the question, go through the process as follows.*)*

All of the pictures in the top row are used to measure things. The measuring cup measures liquids such as water. The thermometer measures how hot or cold it is. The scale measures a person's weight. Which picture in the bottom row belongs in the same group?

(Encourage responses. If someone chooses the correct answer, the ruler, **SAY**:)

You are correct. The ruler is the best answer because we use it to measure how long things are.

(If someone chooses an incorrect answer, **SAY**:)

Well, the ____ isn't the right answer because it does not measure like the other items.

Fill in the circle under the ruler to show that it is the best answer.

(Check to make sure that all students have filled in the second circle. If necessary, explain that examining the options is part of figuring out the rule. For example, the measuring cup, the thermometer, and the scale all have numbers on them. But all of the options also have numbers on them, so this rule is too general.)

(Note that many students who do not solve this puzzle correctly pick the calculator. If students choose the calculator, **SAY**:)

Many students who miss this question choose the calculator. The calculator is the first answer picture. It is important to look at all the answer pictures so you can choose the correct one.