

Form 7

Cognitive Abilities Test™

Practice Activities

Teacher Guide

Screening
Form

Level **5/6**

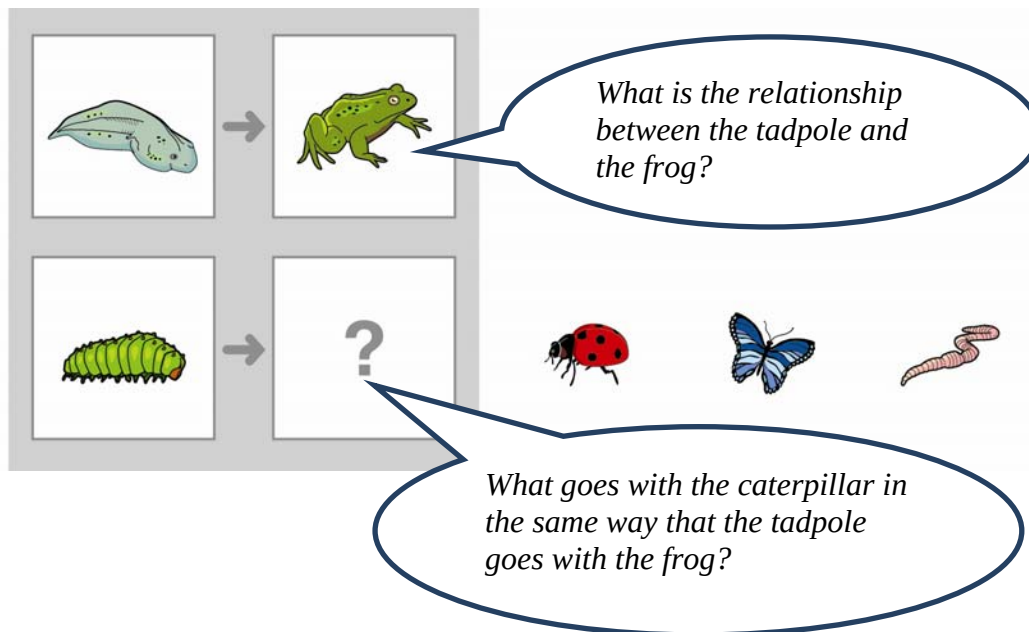
CogAT®

Test 1: Picture Analogies, Levels 5/6–7

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. Also, be sure to have a two-inch-by-four-inch place marker for each student (either a note card or a piece of cardboard).

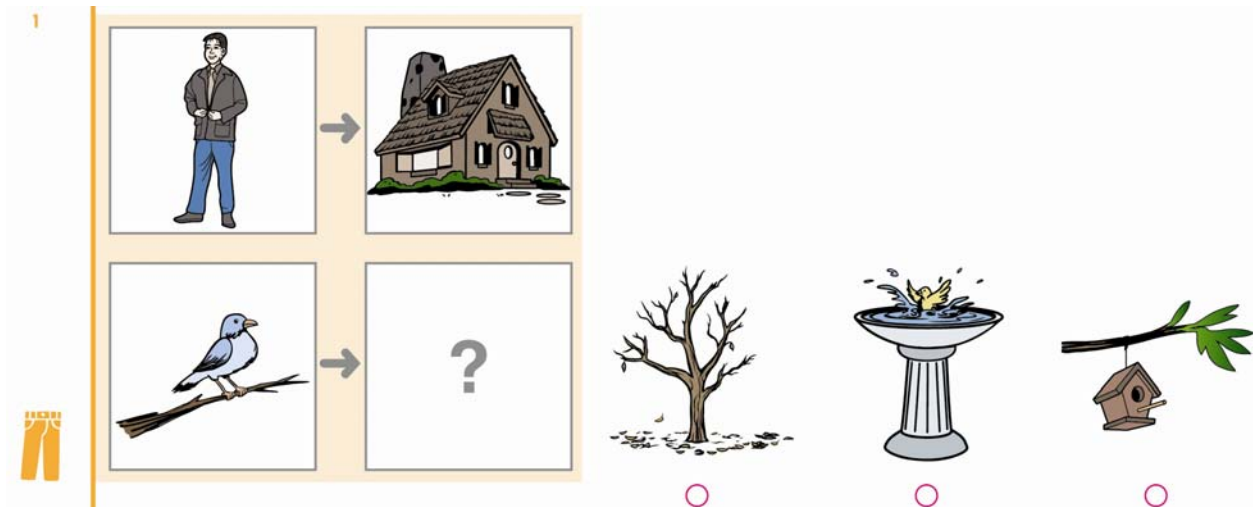
(Make sure each student has a practice booklet and place marker. Then **SAY:**)

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. Put your marker under the **pants**. 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 and **SAY:**)

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. Put your marker under the **hand**.*



(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.

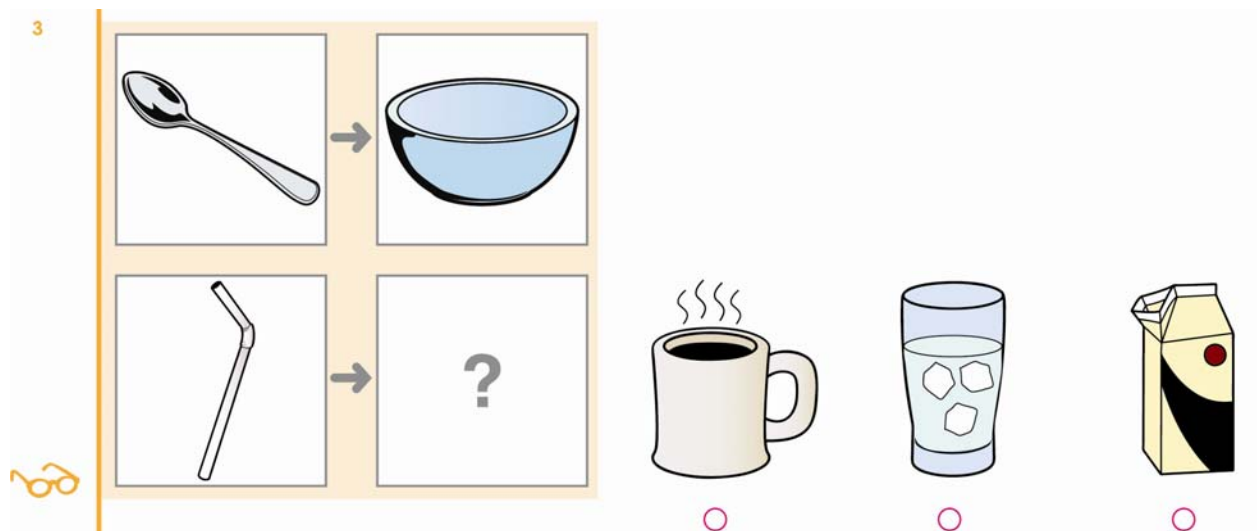
(Point to the third answer choice as you **SAY:**)

Fill in the circle under the picture of 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. Put your marker under the **glasses**.*



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.

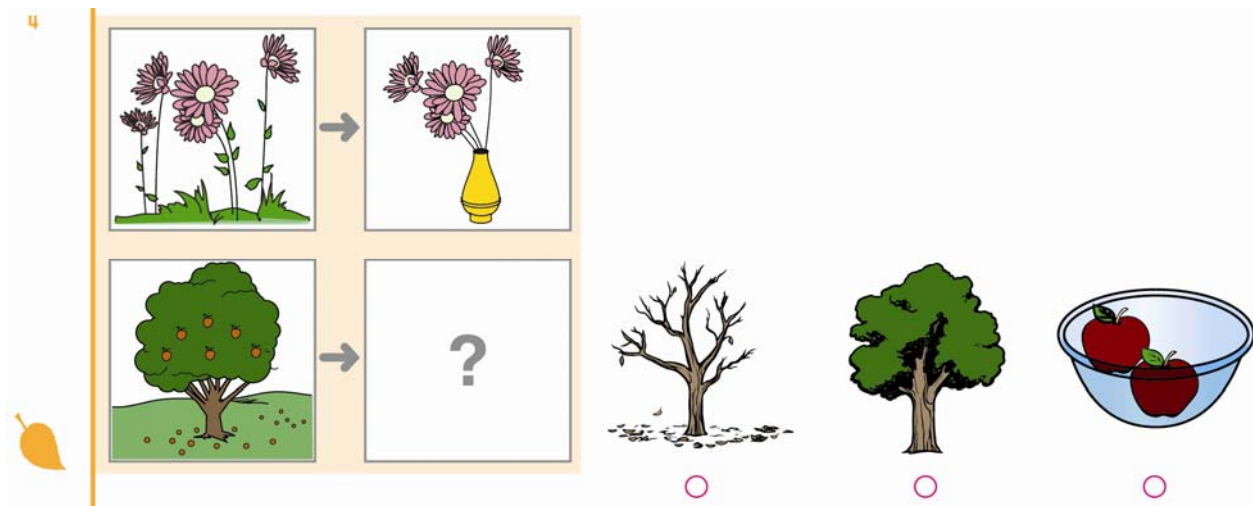
Fill in the circle under the glass of ice water to show it is the correct answer.

(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. Put your marker under the **leaf**. 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. Then 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.

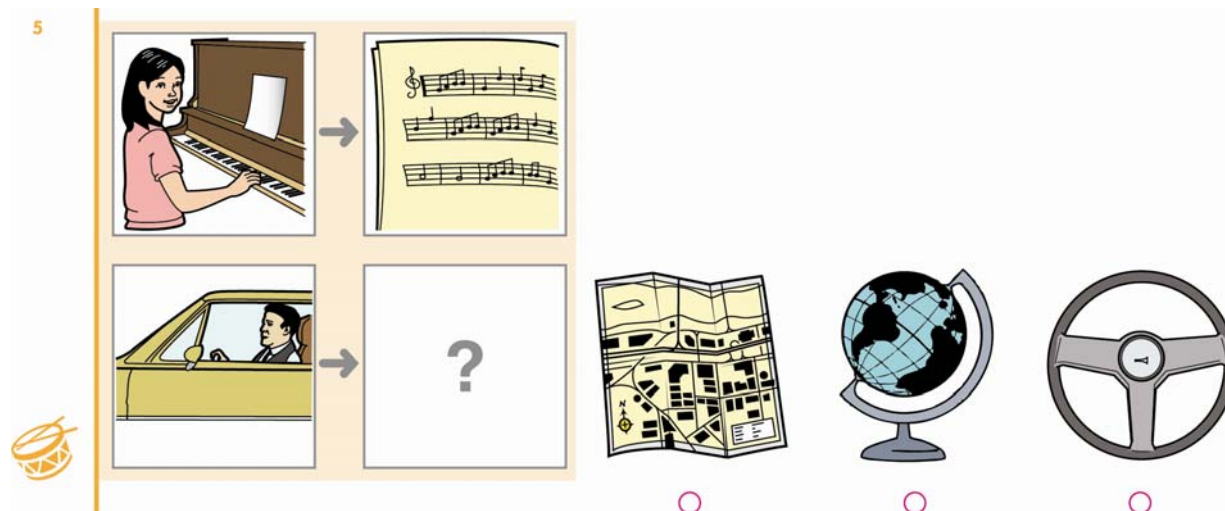
Fill in the circle under the bowl of apples to show that it is the correct answer.

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

P5

*Look at the next practice question. Put your marker under the **drum**. 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.

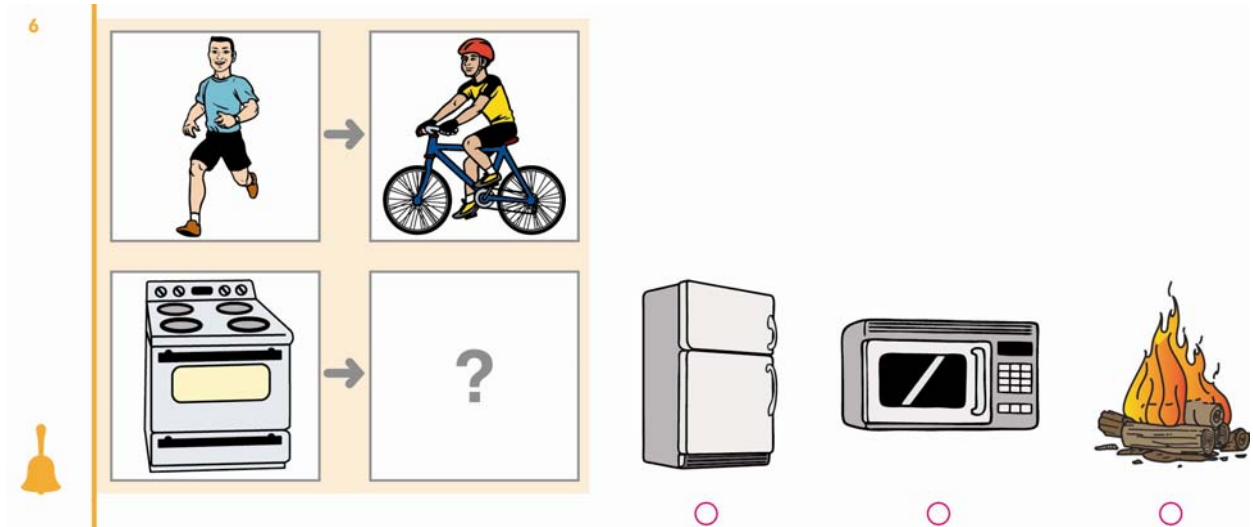
Fill in the circle under the map to show that it is the correct answer.

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

P6

*Look at the last practice question. Put your marker under the **bell**. 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 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 2: Number Analogies, Levels 5/6–7

Part 1: Overview of Number Analogies

An analogy draws parallels between objects or ideas. Analogies can be simple (“Two is one more than one as three is one more than two”) or complex (“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 or remember new ideas. Reasoning by analogy requires attending carefully to the ways in which two things are similar. Then this relationship is mapped onto something new.

The Number Analogies test requires the student to understand the relationship between the two pictures of objects in the top row of each question and then select an answer that makes the two pictures in the bottom row of the question go together in the same way. Performance on this test predicts mathematics achievement because discovering quantitative patterns and relationships is at the core of learning mathematics.

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

What rule can tell us what happened between the first and second boxes?

Apply the same rule to figure out how many balls should go in the box with the question mark.

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

- Think of (and say silently) a rule that describes what happens between the first and second pictures. For example, the second picture has one less item than the first picture.
- Apply the rule to the first picture in the bottom row to determine how the missing picture should appear. Then look for this picture in the answer choices.
- Test the rule on each answer choice, eliminating answer choices that do not fit the rule.

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

- Students may have a tendency to select an answer choice based on number or appearance only. For example, in the sample question above, a student might pick the second answer choice because it looks like the second picture in the top row.
- Students might ignore the direction of the arrow. For example, a student may pick the third answer choice in the sample question above so both rows have one picture with four things and one picture with five things.

Part 2: Number 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. Also, be sure to have a two-inch-by-four-inch place marker for each student (either a note card or a piece of cardboard).

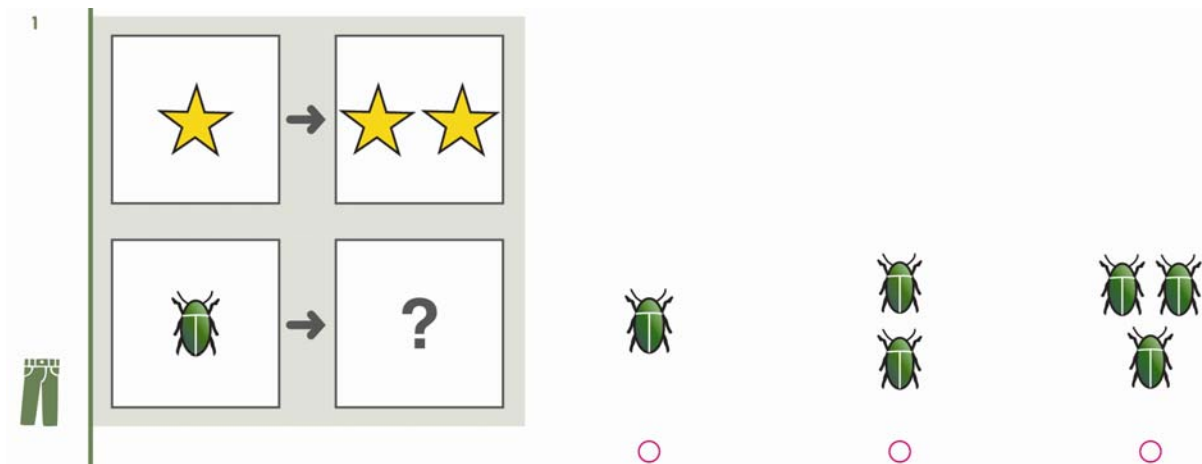
(Make sure each student has a practice booklet and place marker. Then **SAY:**)

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

(Check that all students have the correct page.)

P1

*Let's do the first practice question. Put your marker under the **pants**.*



(Hold up your copy of the booklet. Point to the big box that has pictures inside of it as you **SAY:**)

The big box has three pictures. We must decide which answer picture goes in the box with the question mark.

Look at the two pictures in the top row of the question. The arrow between them means that the two pictures in the top row go together in some way.

(Point to the pictures of stars in the top row as you **SAY:**)

How do the pictures of stars change from the first box to the second box?

(Encourage responses.)

In the first box there is one star, and in the second box there are two stars.

So what is the rule for this question?

(Encourage responses.)

The rule is to add one to the number of things in the first box.

(Note that the rule could also be to double the items in the first box. Here both rules give the same answer.)

Now look at the first picture of the bug in the bottom row of the big box.

(Point to the bug and the box with the question mark as you **SAY**.)

The bug must change in the same way that the star changed. How many bugs should go in the box with the question mark?

(Encourage responses.)

There should be two bugs in the box with the question mark.

(If any students seem confused, ask them to draw the two bugs in the box with the question mark. Then point to the answer pictures as you **SAY**.)

Which answer picture should we choose?

(Encourage responses.)

There should be two bugs in the box with the question mark. Only one picture has two bugs.

Fill in the circle below the picture with two bugs to show that it is the best answer.

(Make sure that all students have filled in the second circle.)

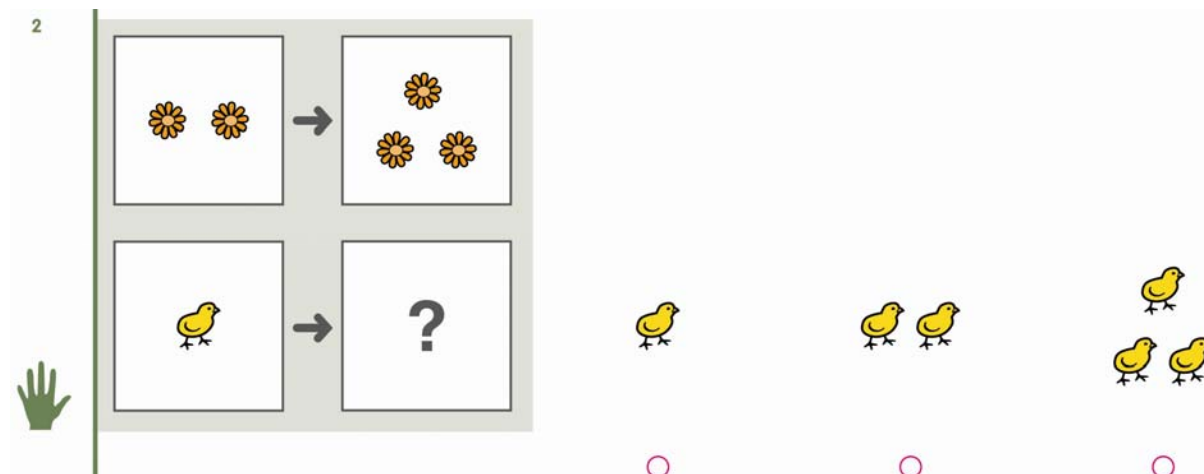
Would it be OK if the bugs were side by side instead of on top of each other?

(Encourage responses.)

*Yes, two bugs side by side would be a better answer. A picture of two bugs side by side would show the right number **and** look the same as the two pictures of stars in the top row. But this was not one of the choices. Only the second answer choice had two bugs, so it is the best answer.*

P2

*Let's do the next practice question. Put your marker under the **hand**.*



Look at the top row of the big box.

(Point to the pictures of flowers in the top row as you **SAY**.)

How do the pictures of flowers change from the first box to the second box?

(Encourage responses.)

The first picture has two flowers and the second picture has three flowers.

So what is the rule for this question?

(Encourage responses.)

The rule for this question is the same as the rule for the first question. The rule is to add one to the number of things in the first box.

Now look at the bottom row of the big box.

(Point to the chick and the question mark as you **SAY**.)

The pictures in the bottom row must follow the same rule as the pictures in the top row. How many chicks should there be in the box with the question mark?

(Encourage responses.)

How many chicks are in the first box?

(Encourage responses.)

What is the rule for this question?

(Encourage responses. Then point to the answer choices as you **SAY**.)

So which answer picture goes in the box with the question mark?

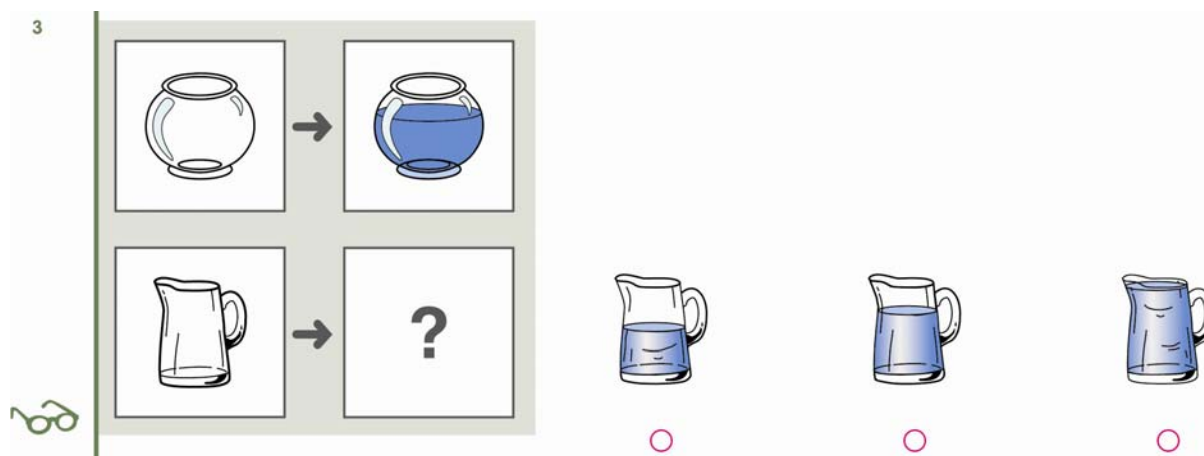
(Encourage responses.)

The picture with two chicks is the correct answer. Fill in the second circle, the circle under the picture of two chicks, to show that it is the correct answer.

(Check to make sure that all students have filled in the second circle. Be sure that students understand why the third answer choice is incorrect, even though it looks like the picture with three flowers. Ask “What is the rule?” and show again how the rule is applied. Then ask “What if the first box had four chicks?”)

P3

*Let’s do the next practice question. Put your marker under the **glasses**.*



Look at the top row of the big box.

(Point to the pictures of fish bowls in the top row as you **SAY**.)

How do the pictures of fish bowls change from the first box to the second box?

(Encourage responses.)

The first fish bowl is empty. How full of water is the second fish bowl? Is it half full? Is it all the way full?

(Encourage students to express the measurement in words.)

The second fish bowl is more than half full, but not all the way full.

Now look at the bottom row of the big box.

(Point to the pitcher and the question mark as you **SAY**.)

The two pitchers in the bottom row of the big box must follow the same rule as the fish bowls in the top row.

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

Which pitcher of water is the correct answer?

(Encourage responses. Then point to the second answer picture.)

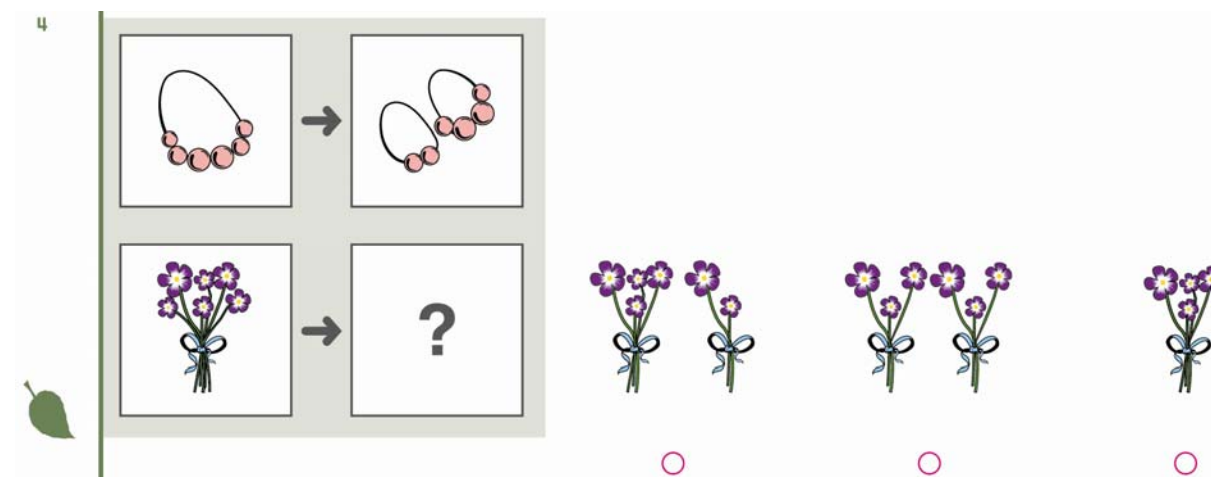
The pitcher should be more than half full but not filled to the top. The second answer picture is the correct answer.

(Check to make sure that all students have filled in the second circle. The first answer choice cannot be the correct answer because the water fills only half, and the pitcher in the third answer choice is completely filled.)

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

P4

*Let's do the next practice question. Put your marker under the **leaf**.*



Look at the necklaces in the top row.

(Point to the pictures of necklaces in the top row as you **SAY**.)

How do the pictures of necklaces change from the first box to the second box?

(Encourage responses.)

How many beads are on the first necklace?

(Encourage responses.)

The first necklace has six beads. What about the second picture?

(Encourage responses.)

The second picture has two beads on the first necklace and four beads on the second necklace. What rule can we use to show what happened to the necklace between the first and second box?

(Encourage responses.)

The six beads on the necklace in the first picture were shared between two necklaces in the second picture. One necklace has two beads and the other has four beads.

Now look at the bottom row of the big box.

(Point to the flowers and the question mark as you **SAY**.)

The pictures of the bouquets, or bunches, of flowers must follow the same rule as the pictures of the necklaces in the top row. How many flowers are in the first bouquet or bunch?

(Encourage responses.)

There are six flowers in the first bouquet.

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

Think about how the answer picture should look. Which answer picture goes with the first bouquet of flowers?

(Encourage responses. Then point to the first answer picture as you **SAY**.)

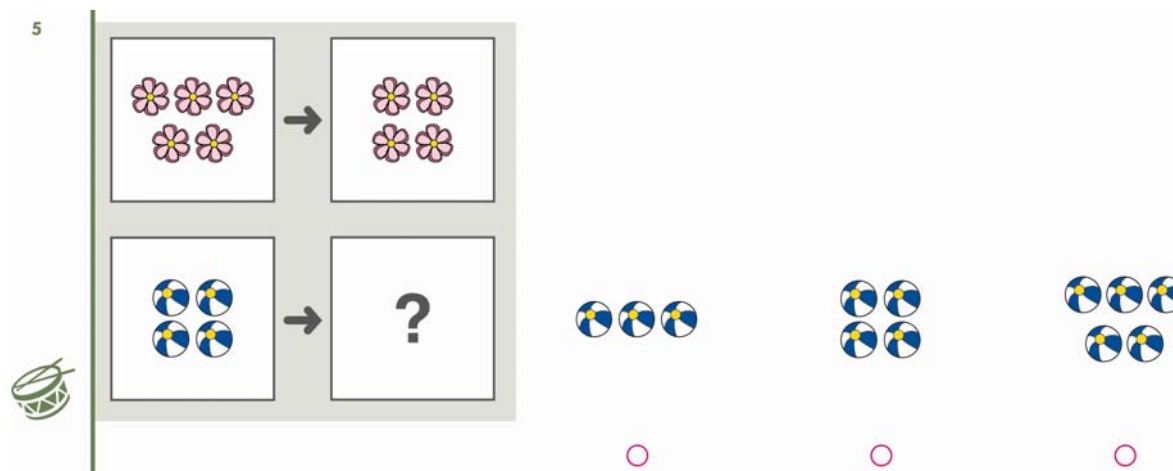
First, one bouquet should change to two bouquets in the same way that one necklace changed to two necklaces. The six flowers in the first bouquet should be separated into one bouquet with two flowers and another bouquet with four flowers. Fill in the circle under the first answer picture to show that it is the correct answer.

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

P5

*Now look at the next practice question. Put your marker under the **drum**. Try to solve this practice question on your own.*

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



Which answer picture goes in the box with the question mark?

(Encourage responses.)

How did you answer this question?

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

There are five flowers in the first box and four flowers in the second box. What is the rule that changes five things into four things?

(Encourage responses.)

The rule is to take away, or subtract, one from the number of things in the first box.

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

Which answer picture goes in the box with the question mark?

(Encourage responses.)

The answer should have three beach balls. Three beach balls are one less than four beach balls in the same way that four flowers are one less than five flowers. The first answer picture is the correct answer.

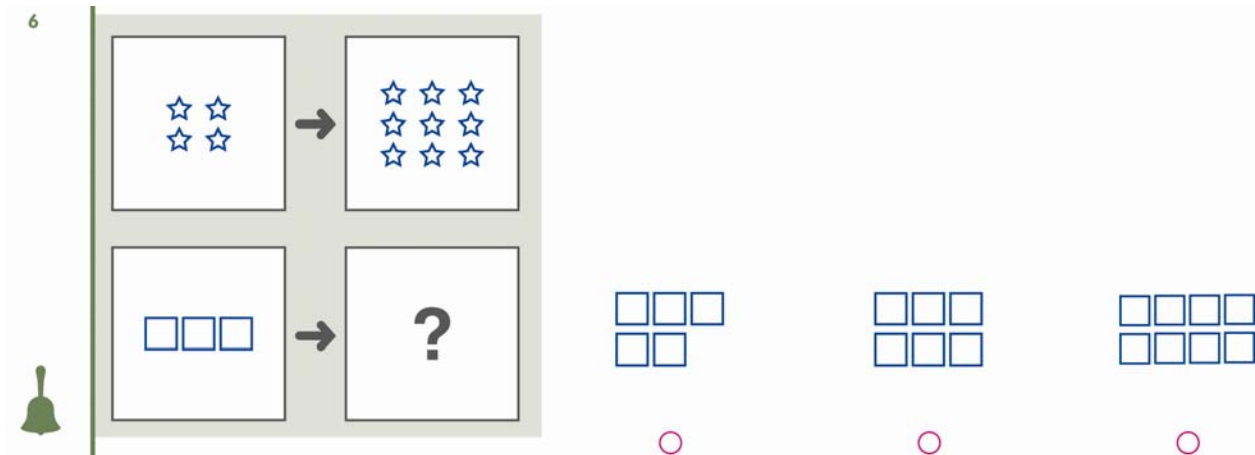
(Check to make sure that all students have filled in the first circle. If any students picked the third answer choice, **SAY**:)

Why is the last answer picture wrong? Five beach balls cannot be the answer because you must always go from left to right. Always apply the rule to the first box in the bottom row to decide what should go in the second box.

P6

Now look at the last practice question. Put your marker under the **bell**. Try to solve this practice question on your own.

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



Which answer picture goes in the box with the question mark?

(Encourage responses.)

How did you answer this question?

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

There are four stars in the first box and nine stars in the second box. What is the rule that changes four things into nine things?

(Encourage responses. If necessary, demonstrate by counting the stars.)

The rule is to add five to the number of things in the first box.

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

Which answer picture goes in the box with the question mark?

(Encourage responses.)

The third answer picture with eight squares is correct. Five squares added to three squares makes eight squares just like five stars added to four stars makes nine stars.

(Check to make sure that students have filled in the third circle. If any students picked the second answer choice, **SAY:**)

*Be careful not to choose the second picture even though it looks similar to the correct answer.
You must count the boxes in each picture to make sure you get the right answer.*

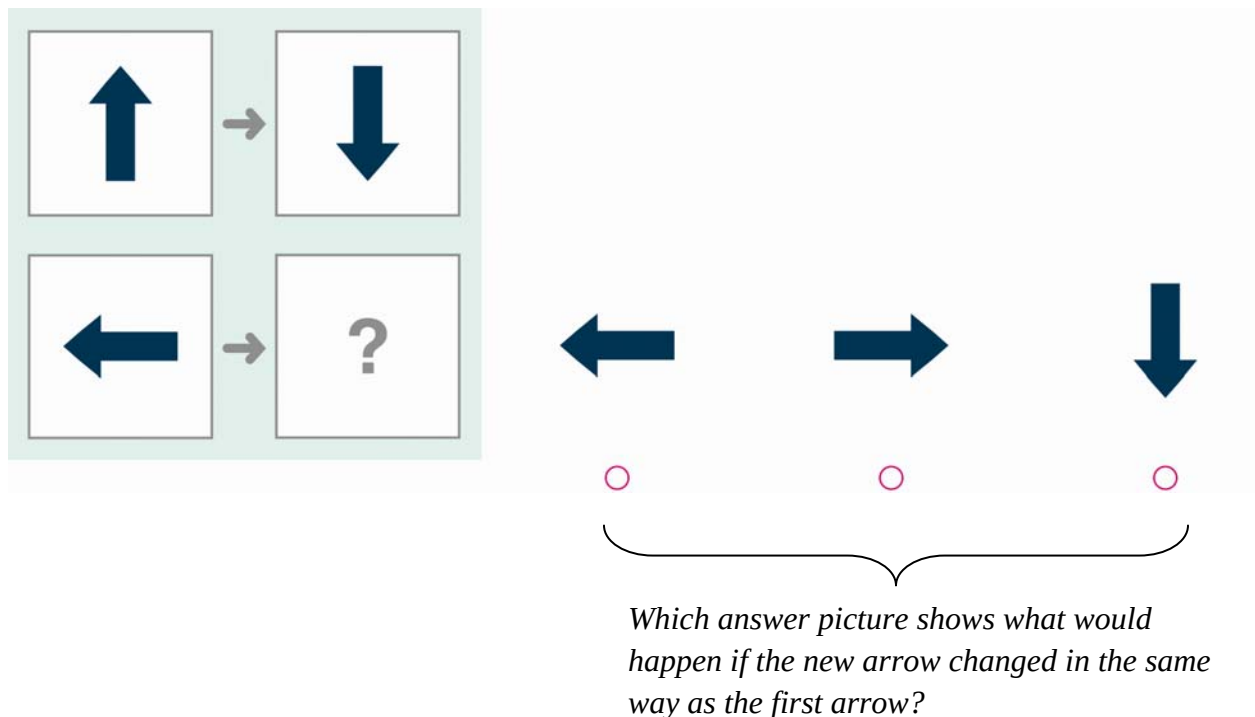
Test 3: Figure Matrices, Levels 5/6–7

Part 1: Overview of Figure Matrices

An analogy draws parallels between objects or ideas, for example, “up is to down as left is to right.” Analogies can be about simple things “A tadpole is like a fish” or complex concepts “Friendships are like glass. Once broken, they are hard to fix.” Successful learners habitually reason by analogy. Good analogies allow them to use what they already know to understand or remember new ideas. Reasoning by analogy requires attending carefully to how two things are similar and then applying these relationships to something new.

The Figure Matrices test is like the Picture Analogies and Number Analogies tests except the questions use figures or shapes rather than pictures of objects or activities.

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



When practicing the Figure Matrices questions, encourage students to use these strategies.

- Carefully examine the first two figures. Then think of a rule (and say it silently) that describes the relationship between the figures. For example, flip the first figure to get the second one.
- Apply the rule to the third figure to determine the missing figure.
- Test the rule on each answer picture, eliminating answer pictures that do not fit the rule.
- Look for a 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 choose an answer picture that looks like the figure in the bottom row. For example, in the sample question above, students might select the first answer choice.
- Students might infer the wrong relationship between the first two figures. Putting the rule into words will help them be more precise.
- Students may overlook or forget a critical feature of the figures in the top row. Using language to describe the rules will help them remember them.
- Students might select an answer choice before checking all the answer pictures.

Part 2: Figure Matrices 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. Also, be sure to have a two-inch-by-four-inch place marker for each student (either a note card or a piece of cardboard).

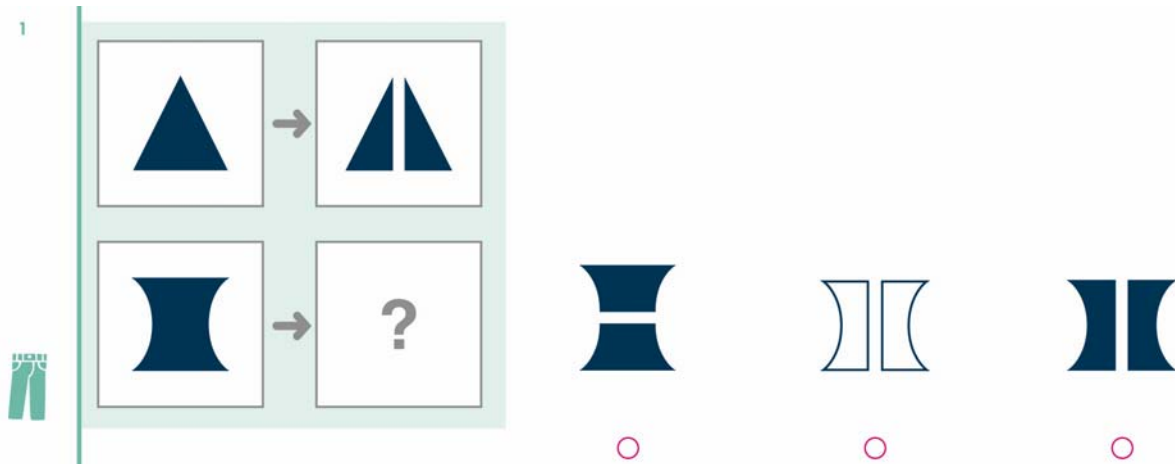
(Make sure each student has a practice booklet and place marker. Then **SAY**.)

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

(Check that all students have the correct page.)

P1

*Let's do the first practice question together. Put your marker under the **pants**.*



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

The big box has three pictures. We must decide which answer picture goes in the box with the question mark.

(Point to the top row of the big box as you **SAY**.)

Look at the shapes in the top row. The first picture is a triangle, and the second picture is two triangles. The arrow (Point.) means that the first picture goes with the second picture in some way. How do the first and second pictures go together?

(Encourage responses.)

The second picture looks like the triangle in the first picture, but it is cut in half.

(Point to the bottom row of the big box as you **SAY**.)

The two pictures in the bottom row must go together in the same way.

What would we get if we cut the first shape in the bottom row in half?

(Encourage responses. Then point to the answer choices as you **SAY**.)

Let's look at the answer pictures.

- *The first answer picture shows a shape cut in half, but the cut goes the wrong way.*
- *The second answer picture shows a shape cut in half, but the shapes aren't darkened like the first one.*
- *In the third picture, the shape is cut in half from top to bottom and the two new shapes are darkened.*

Which picture follows the same rule as the triangles in the top row of the big box?

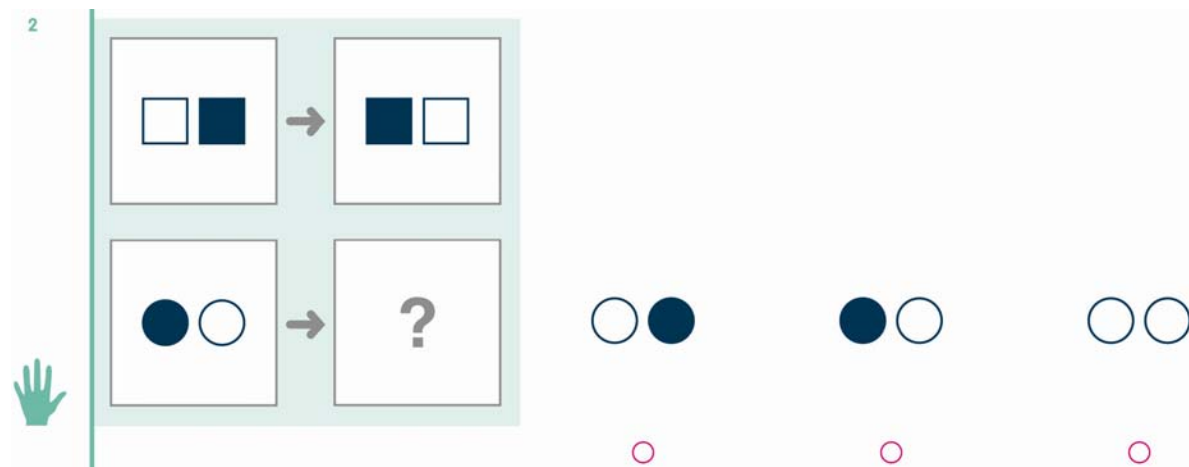
(Encourage responses. Then point to the third choice as you **SAY**.)

The third shape is the best answer because it's cut in half from top to bottom, just like the triangles. It is also darkened like the triangles. Fill in the circle under the third answer picture to show that it is the correct answer.

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

P2

*Let's do the second practice question. Put your marker under the **hand**.*



(Point to the big box as you **SAY**.)

The question has four boxes. You must decide which answer picture goes in the box with the question mark.

(Point to the top row as you **SAY**.)

Look at the top row of the big box. The first picture shows a white square and a dark square. The second picture shows a dark square and a white square.

How do these pictures go together?

(Encourage responses.)

The squares in the second box are the same but they are in the opposite order - white, dark then dark white.

(Point to the bottom row of the big box as you **SAY**.)

The shapes in the bottom row of the big box must go together in the same way.

In the first picture we see a dark circle and a white circle. What shapes should go in the box with the question mark?

(Encourage students to say the rule. Then point to the answer pictures as you **SAY**.)

Which answer picture shows that?

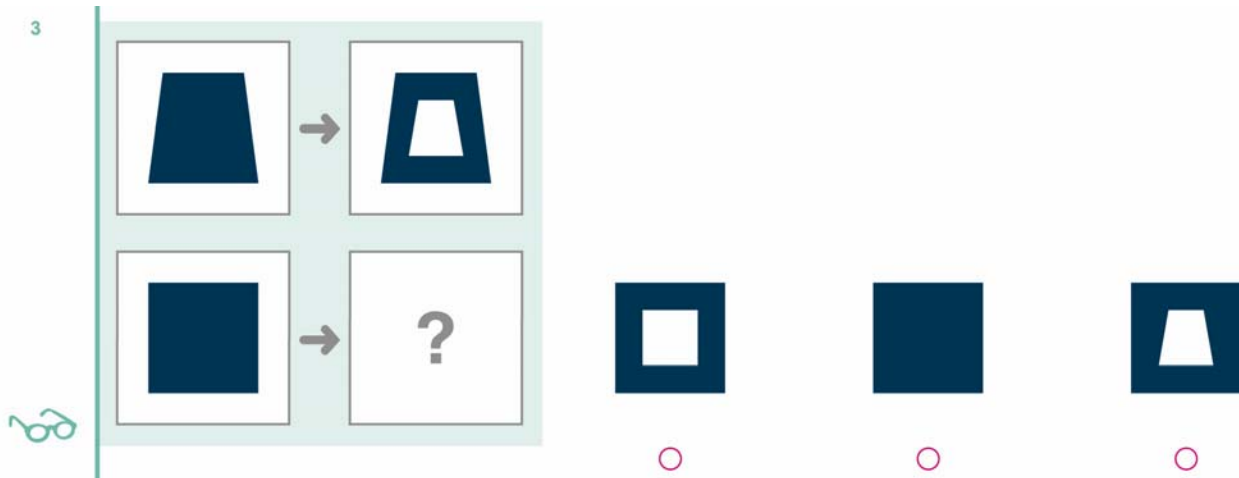
(Encourage responses. Then point to the first answer picture as you **SAY**.)

The two circles are in the opposite order than they are in the first box. This is just what happened to the squares in the top row. Fill in the circle under the first answer picture to show it is the correct answer.

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

P3

*Let's do the third practice question. Put your marker under the **glasses**.*



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

Look at the two shapes in the top row of the question. How do these shapes go together?

(Encourage responses.)

The second shape looks like the first one but with the middle cut out.

(Point to the bottom row as you **SAY**:)

The two shapes in the bottom row must go together in the same way.

Look at the dark square in the bottom row. How would the square look if we cut out the middle?

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

Which answer picture shows that?

(Encourage responses. Then point to the first and last answer pictures as you **SAY**:)

Both of these answer pictures have the middle cut out, so which do we choose? We need to find another rule so we can decide which answer picture is correct.

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

Do you notice anything else about the part that was cut out of this shape?

(Encourage responses.)

The part that was cut out is the same shape as the part that is still there. So which answer picture should we choose?

(Encourage responses. Then point to the first answer choice as you **SAY**.)

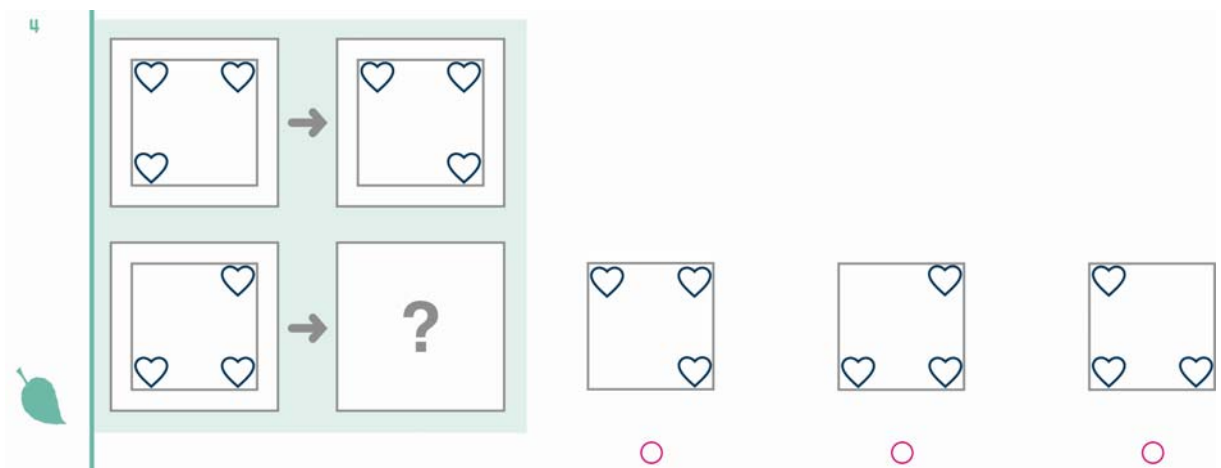
We should choose the first answer picture. It's a square with a cut-out that is also a square. Fill in the circle under the first answer picture to show that it is the best answer.

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

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

P4

*Let's do the fourth practice question. Put your marker under the **leaf**.*



(Point to the top row as you **SAY**.)

Look at the pictures in the top row of the big box. Both pictures show squares with hearts in three corners. How do these pictures go together?

(Encourage responses. Note that there are several different rules that would produce this change. For example, the single heart moves to the empty space. Or the single heart switches corners. Or the entire picture was flipped about the vertical axis.)

The second picture looks like the first one but it has been flipped over.

(Demonstrate with your hand. If necessary, draw 3 hearts on a transparent sheet and flip it. Then point to the bottom row as you **SAY**.)

The two pictures in the bottom row must go together in the same way. What would happen if we

flipped the picture in the first box?

(Encourage responses. Then point to the answer choices as you **SAY**.)

Which answer picture shows that?

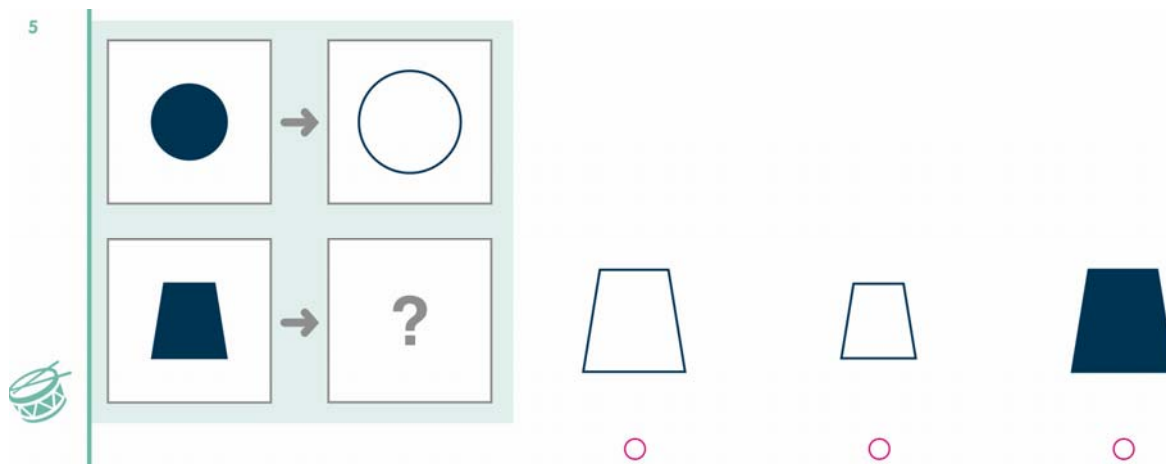
(Encourage responses.)

The last answer picture shows the three hearts flipped over. Fill in the circle under the last answer picture to show that it is the correct answer.

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

P5

*Let's do the next practice question. Put your marker under the **drum**.*



(Point to the top row as you **SAY**.)

Look at the two shapes in the top row. How do they go together?

(Encourage responses.)

The second shape looks like the first one, but it is bigger and white instead of dark.

(Point to the bottom row as you **SAY**.)

The two shapes in the bottom row must go together in the same way.

We see a small dark shape in the first box. What shape should go in the second box?

(Encourage responses. Then point to the answer choices as you **SAY**.)

Which answer picture shows that?

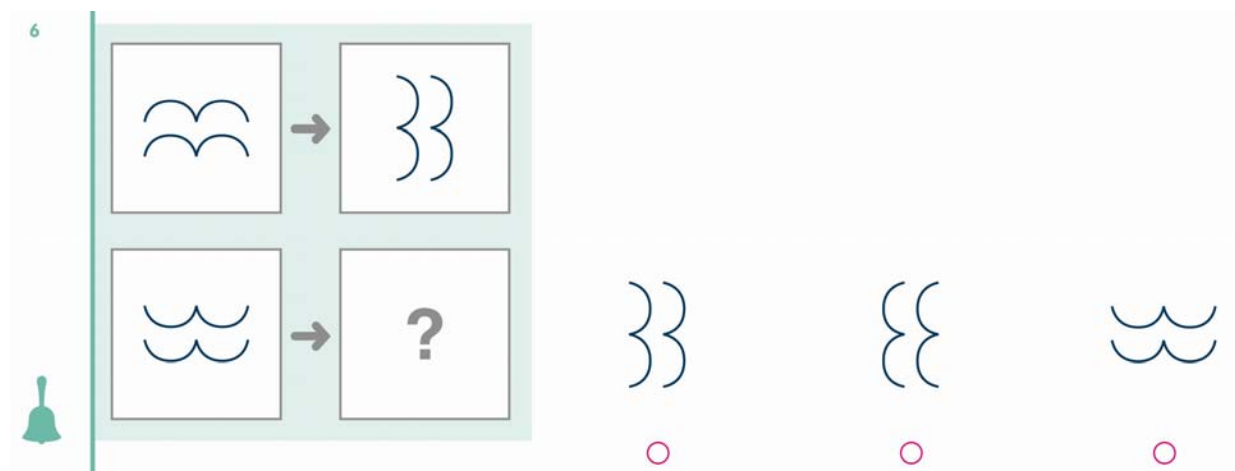
The first answer picture is the same shape as the one in the first box, just bigger and white instead of dark. Fill in the circle under the first answer picture to show that it is the correct answer.

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

P6

(Find a square piece of paper. Draw the same lines as are shown in the first picture in the top row of the big box below. Then **SAY**:)

*Let's do the last practice question. Put your marker under the **bell**.*



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

Look at the pictures in the top row. How do they go together?

(Encourage responses. Then hold up the square piece of paper to show how the first picture looks. Slowly turn it one quarter turn to the right.)

The second picture shows the first picture after it is turned to the right.

(If any students seem uncertain, repeat turning the picture to the right. Then point to the bottom row of the big box.)

The two pictures in the bottom row of the big box must go together in the same way.

(Hold up the square piece of paper to show how the first picture in the bottom row looks.)

The picture starts like this. Now I'll turn it the same way the picture in the top row turned.

(Turn the picture 90° to the right.)

Which answer picture shows this? Fill in the circle under the second answer picture to show it is the correct answer.

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