5 Types of Thinking Strategies Drill

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People think and solve problems when we run into challenges in everyday life or when asked to make decisions. Sony Global Education is leading the way to developing new approaches to problem solving through a focus on “thinking strategies” and classifies thinking strategies into five major categories named “5 Types of Thinking Strategies.”

This “5 Types of Thinking Strategies Drill” includes five unique approaches to needed to solve each problem.

By learning and grasping which thinking strategies can be used to solve each problem, it will lead to the development of thinking ability.

◆ Features of each Thinking Strategies

**Scan ‘Reading what’s necessary’**
Detectives first investigate every aspect of the crime scene in order to come up with a perfect deduction — is the door locked? Is anything suspicious lying on the floor? Similarly, ‘Scan’ is an approach where you read elements that are necessary from the question or diagram.

**Create ‘Finding inspiration’**
It’s interesting how the images of things around you completely change if you look at them from the front, side, and above. Similarly, you may find an unexpected solution if you look at the question or task from different perspectives — this is the ‘Create’ approach.

**Reverse ‘Following the path backward’**
When finding your way through a maze, it’s most efficient if you follow the path backward from Finish to Start, rather than blindly finding your way out. Similarly, ‘Reverse’ is an approach where you imagine the solved problem then sort out the possible processes.

**Knock ‘Clarifying the possibilities’**
When you need to use the bathroom, you may knock on stall doors one by one to find an empty room. Similarly, ‘Knock’ is an approach where you clarify every single possibility without overlaps.

**Step ‘Building your thoughts’**
You climb up the stairs one step at a time. If one of the steps is missing, you can’t reach the end. Similarly, ‘Step’ is an approach where you build the steps correctly one by one to reach the goal of problem-solving.
# Index

<table>
<thead>
<tr>
<th>Index</th>
<th>01 Meeting Point</th>
<th>05 5 Types of Thinking Strategies Drill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>02 Animal Dice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>03 Square Origami</td>
<td></td>
</tr>
<tr>
<td></td>
<td>04 Where is Kenny?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>05 Three Chairs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>06 A Snack for Today</td>
<td></td>
</tr>
<tr>
<td></td>
<td>07 Make Them Fit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>08 Glass Sheets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>09 Cards from 1 to 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 Out to lunch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 Chocolate Gifts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 A Tricolor Puzzle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 Circles and Triangles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14 812 x □□</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 Big Family</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 On the Beach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 The A. B. C. Neighbors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 Tennis Tournament</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 What’s the date today?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 Fibbers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21 Let’s Get Fit!</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22 Clover Patch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>23 Rotating Card in the Wind</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 True or False?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 In The Frame</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26 Clock in a Mirror</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27 Craft Time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28 Marbles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29 Sandwich Box</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 Ball Sorting Machines</td>
<td></td>
</tr>
</tbody>
</table>

Explanation ······ 35-69
Mina and Yolandi are going to an amusement park together. They plan to meet up in the train that goes to the amusement park. Mina gets to the train first, from the station closest to her home. Then she texted Yolandi who is at the next station waiting for the train to come.

Yolandi

The car I'm in is third from the front and fifth from the end.

How many cars does the train have?
Animal Dice

Here are 4 dice with 6 different animals drawn on each one. Three are pictures of the same dice. Which one is the different dice?

A

B

C

D

Answer
There are five square pieces of paper of the same size, labeled A to E. They were placed on top of each other as shown below. Which one was placed at the bottom?

![Diagram of square origami pieces labeled A to E]

Answer: [Specify the answer based on the diagram]
Find Kenny’s seat.

Kenny sits two seats away from me.

Brent sits next to me, on my left.

My seat is \( \text{C} \).

Kenny does not sit next to me.

Brent sits next to me, on my left.

Anna

Brent
Three Chairs

These three chairs belong to Dan, Chloe and Tim.

- My chair is not placed at one of the ends.
  - Dan

- I did not place my chair at the left end.
  - Chloe

- Mine is not next to Chloe’s.
  - Tim

Who’s chair is at the left end?

Answer
Phil, Stu and Alan were thinking about what snacks they were going to have today. After a while, their mother came back from shopping with some snacks.

Donuts! Right?

I say, a cake or donuts.

I don't think she bought us cookies...

Some of you got it right, and some of you got it wrong. I bought one of a cake, donuts, or cookies.

What was their snack for today?

Answer
Use the 4 pieces A to D to form the shape pictured below. You can turn the pieces around but cannot flip them. Which piece lands on the star? 

Answer
Glass Sheets

There were six sheets of glass, two each of three kinds: blue, yellow and clear.
When a blue sheet and a yellow sheet overlap each other, they look green.

Sora, Ron and Luca picked two sheets each and had them overlap. Sora saw blue, Ron saw yellow, and Luca saw green.

What color of glass sheets did Sora have?

Answer
There are five cards numbered 1 2 3 4 5. Hannah arranged them face down in a line, and Marnie guessed their order.

How many cards are greater than one, on the left side of 1?

Two.

How many cards are greater than two, on the right side of 2?

One.

What do you get if you add every number on the right side of 3?

7.

Got it!

Read their conversation carefully.

What is the number that Hannah placed at the end of the right side?

Answer
Alyssa, Bridget, Connor and Dylan are having lunch at a nice restaurant. They sit at the square table shown below.

Bridget and I always sit next to each other.

Connor does not sit in front of me.

Dylan sits on my right side.

Who sits on Bridget’s right side?

Answer
Each package contains a different number of chocolates depending on the color.

Numbers at the left and bottom show how many chocolates each row or column has in total.

For example, ʴ + ʴ = 8 chocolates. Find the total number of the chocolates that fits in ‘?’.

Answer
A Tricolor Puzzle

Let’s paint each tile from A to L using these 3 colors: blue, yellow, and pink. If you follow the rules below, which color will L be?

1. A is painted in blue.
2. The tiles that are next to each other should be painted in different colors.

Answer
Circles and Triangles

How many times larger is the biggest triangle than the smallest triangle?

Answer
Fill in the boxes below with the correct numbers.

What numbers fit in the red boxes?

Here is a multiplication problem:

\[ 812 \times \square \square \]

Answer
There are 5 children in the Campbell family.

Um, Seymour is older than Miranda, and Franny is older than Toni. We had two kids between Austin and Miranda. Toni is in the middle. ... Hey, do not call me a bad father. I just have a terrible memory!

Who is the youngest among the Campbells, Seymour, Miranda, Toni, Franny or Austin?

Answer
It’s summer vacation!
Brian, Joanne, Tanya and Carlo went to the beach and had a swimming competition.

- Tanya finished in last place.
- Brian finished in 3rd place.
- Joanne was the champion!
- I finished 2nd...from last.

The slowest couple felt too embarrassed to tell the truth. The two fastest answered honestly.
In what place did Tanya finish?

---

Answer
Eight families whose names start from A to H live in the houses labeled as I, II, III, IV, V, VI, VII and VIII as shown below. Who lives in House III?

- Hint 1: E lives right across the street from A.
- Hint 2: C lives right across the street from F.
- Hint 3: F lives in between E and H.
- Hint 4: G lives in between C and B.
- Hint 5: D lives in House VIII.

---

Answer
100 people join a tennis tournament. How many matches are there in total?

Answer
What’s the date today?

Pete is 10 years old. Two days ago, he was 9 years old. He turns 11 years old this year.

With this in mind, what is today’s date?

Answer
There are five people labeled A, B, C, D & E. Some of them are fibbers who always tell fibs. When they were asked how many of them are fibbers, they answered as below. How many of them are fibbing?

- A: Only one.
- B: Two.
- C: Three.
- D: Four.
- E: Five!

Answer
Let’s Get Fit!

Ricki, Kitty, Simon, Tobias, Nana and Hadia love P.E. classes. Today, they had a fitness test that consisted of six events: a 50-meter sprint, a softball throw, the long jump, side steps, endurance running and the jump rope.

Nana finished in 3rd place in the 50-meter sprint.

Who finished in 1st place in the 50-meter sprint?

I was better than Kitty in five events.
I was better than Simon in five events.
I was better than Tobias in five events.
I was better than Nana in five events.
I was better than Hadia in five events.
I was better than Ricki in five events.

Answer
The rectangle below is divided into eight parts with the same area. Find the length of ‘? ’ in centimeters. The figure is not drawn to scale.
There is a card that rotates around an axis. You can see a ♬ on one side and a ♩ on the other side. Figure 1 shows the image when it rotates.

What image do you see if you move the axis as in Figure 2 and turn the card around? Choose from A to D.

Answer
True or False?

Someone out of the group between Ian, Fiona, Nicholas, Ysabel, Gareth, and Megan came late to my music class. Whoever it is, be honest and raise your hand.

Well, it must be either Ian, Fiona or Gareth.

No, it is out of Ian, Nicholas or Ysabel.

That’s not true. Fiona or Ysabel or Megan came late.

Believe me. It’s either Ian, Nicholas or Gareth.

There is only one person telling the truth and three of the rest are lying. Who was the one late to the music class?

Answer
In The Frame

Karen went shopping and got a cute floral photo frame. If you put a photo in it, you can see it in the spotted area.

What area of the photo is visible?

Answer
Lucy was getting ready in her room one morning. Looking at the mirror, she saw that her clock fell off the wall and landed on the sofa. The picture below shows what she saw at that moment. Her clock did not have any numbers on its face and its hands were the same size.

What time was it?

---

Answer
Craft Time

There were five pieces of rectangular paper that had an area of 24 cm² each.
We made 1 cm margins around their edges and stuck them together to make a big sheet of paper. At first, we planned to paste their long sides together. However, we stuck their short sides together by mistake.
As a result, the area of the completed paper became 20 cm² larger than planned.
How long was the short side of the rectangle?

Answer
In this machine, there are 10 red and blue marbles each. You need to spend 10¢ to get either a red or a blue marble. How much do you have to spend to get three marbles of the same color?

Answer
Sandwich Box

This lunch box contains 8 sandwich triangles that are the same size. What is the area of the empty square that is left in the center?

Answer
There is a ball sorting machine as shown in Figure 1. When you throw balls into the top, they are sorted to the right and left like this: the first one comes out from the right, the second from the left, the third from the right, the fourth from the left... and so on.

Six of the same ball sorting machines are connected to make a bigger machine as shown in Figure 2. How many balls do you need to throw to get a ball from d?
Answer and Explanation
Did you think the answer is $3 + 5 = 8$ cars? Not this time!

So the answer is 7 cars.

### Explanation: Meeting Point

- **Front:***3rd from the front.***
- **Back:***5th from the end.***

### Answer:

7 cars

### Explanation: Animal Dice

Look at:

- **Bear**
- **Dog**
- **Rabbit**
- **Tiger**

In B, **Dog** is on the bottom-right side of **Bear**.

In C, **Rabbit** is on the bottom-right side of **Bear**. B and C are different dice.

In C, **Dog** is on the bottom-left side of **Bear**.

In D, **Tiger** is on the bottom-left side of **Bear**. C and D are different dice.

If B is the different one, C and D have to be the same.

If D is the different one, B and C have to be the same.

As there is only one different dice, the answer is C.

### Answer:

C
Let’s remove the pieces of paper one by one.

How does it look after ② is taken away?

Likewise, you can find out where the other pieces are.

As you can see, ③ is the one placed at the bottom.
Carefully read what everyone says. Let’s look at the simplest comment first. According to Anna, she sits on \( \text{B} \).

Let’s check where Brent and Tony actually sit. If \( \text{A} \) is the case, Maria sits 4 seats away from Kenny - this does not fit what she says. Therefore, Brent and Tony sit as in \( \text{B} \).

According to Brent, Kenny does not sit next to him - So Kenny does not sit on \( \text{C} \). Now you see where everyone sits!

Kenny’s seat is \( \text{A} \).

Answer

A
Which chair is Dan’s?

My chair is not placed at one of the ends.

Dan

Not one of the ends... This means it’s in the middle.

Which chair is Chloe’s?

I did not place my chair at the left end.

Chloe

Since Dan’s is placed in the middle, Chloe’s fits at the right end.

Which chair is Tim’s?

Mine is not next to Chloe’s.

Tim

Which one is left? This one is definitely not next to Chloe’s.

As you can see, their chairs are placed as follows. The chair at the left end is Tim’s.

Answer

Tim
Assume that it was ☕️.

<table>
<thead>
<tr>
<th>Donuts! Right?</th>
<th>I say, a cake or donuts.</th>
<th>I don't think she bought us cookies...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phil</td>
<td>Stu</td>
<td>Alan</td>
</tr>
<tr>
<td>✓ Correct</td>
<td>✓ Correct</td>
<td>✓ Correct</td>
</tr>
</tbody>
</table>

What everyone said was correct.  
That contradicts what their mother said.

Assume that is was 🎂.

<table>
<thead>
<tr>
<th>Donuts! Right?</th>
<th>I say, a cake or donuts.</th>
<th>I don't think she bought us cookies...</th>
</tr>
</thead>
<tbody>
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<td>Stu</td>
<td>Alan</td>
</tr>
<tr>
<td>✗ Incorrect</td>
<td>✓ Correct</td>
<td>✓ Correct</td>
</tr>
</tbody>
</table>

Phil got it wrong, but Stu and Alan got it right.  
That goes along with what their mother said.

Assume that is was 🍪.

<table>
<thead>
<tr>
<th>Donuts! Right?</th>
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<th>I don't think she bought us cookies...</th>
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<td>✗ Incorrect</td>
<td>✗ Incorrect</td>
<td>✗ Incorrect</td>
</tr>
</tbody>
</table>

No one made the right guess.  
That contradicts what their mother said.

What their mother said makes sense only when she bought them a cake.  
That means, 🍰 was their snack for today!
Let’s think of how to place ③.

Place D in a way that the rest of the squares can be replaced with sets of 5 squares.

If you try another possibility...

From Step I, you can see that there are 3 ways of placing ③.

Out of the three above, ③ is only one that the pieces A, B, and C can fit in neatly.

Let’s place all the pieces now.

As you can see, the answer is ③.
What colors can you make by putting two sheets on the top of each other?

There were six sheets of glass, two each of three kinds: blue, yellow and clear. When a blue sheet and a yellow sheet overlap each other, they look green.

There are two ways to make blue or yellow.

What color of glass sheets did they pick?

<table>
<thead>
<tr>
<th>They see...</th>
<th>They picked...</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Sora" /></td>
<td><img src="image" alt="Sora" /></td>
</tr>
<tr>
<td><img src="image" alt="Ron" /></td>
<td><img src="image" alt="Ron" /></td>
</tr>
<tr>
<td><img src="image" alt="Luca" /></td>
<td><img src="image" alt="Luca" /></td>
</tr>
</tbody>
</table>

Now, what colors of glass sheets are left?

The glass sheets that Sora had were blue and clear.

Answer

Blue and clear
What do you know from part 1?

**Numbers greater than one:** 2, 3, 4, 5

**Numbers smaller than 1:** None

All the other cards are greater than 1.

→ 1 fits in the position third from the left.

What do you know from part 2?

There is at least one card on the right side of 2 - so it is not at the right end.

What if 2 is placed on the left side of 1?

The other cards 3, 4, 5 have numbers greater than two.

Only one card on the right side of 1 is greater than two. 2 cannot be placed at the left of 1.

→ 2 only fits in the position second from the right!
There are some cards on the right side of 3.

What if 3 is placed at the left end?

The other cards are 4 & 5.

Numbers on the right add up to 12. 3 is not placed at the left end.

3 is placed at the second from the left.

The numbers on the right side of 3 add up to 7.

4 is at the right end!

Hannah put 4 at the far right side.
First, let’s make Dylan take a seat.

For example, assume Connor sits at \( \text{A} \).

Dylan sits on my right side.

\[ \rightarrow \text{Dylan sits at } \text{D}. \]

Next, let’s see what Bridgit says.

Connor does not sit in front of me.

\[ \rightarrow \text{Bridgit does not sit at } \text{C}. \]

This means that Bridgit sits at \( \text{C} \), while Alyssa sits at \( \text{B} \).

Let’s check if it goes along with what Alyssa says.

Bridget and I always sit next to each other.

Just like she says, Alyssa and Bridgit sit next to each other.

As you can see, Connor sits on the right side of Bridgit.

Answer

Connor
What do you get by adding all the numbers on the left?

\[ 4 + 13 + 13 + 18 = 48 \]

The total number of all the chocolates!

What do you get by adding all the numbers at the bottom?

\[ 19 + \ ? + 8 + 4 = 31 + \ ? \]

This shows the total number of all the chocolates, too!

Shows the total number of all the chocolates.

Now let’s find ‘?’.

\[ 4 + 13 + 13 + 18 = 19 + \ ? + 8 + 4 \]
\[ 48 = 31 + \ ? \]
\[ \ ? = 17 \]

As you can see, ‘?’ is 17.

Answer: 17
Let’s paint the tiles one by one.

Since ③ cannot be blue, let’s try with yellow first.

④ must be pink.

⑤ must be yellow.

If you paint the rest of the tiles...

It also works if you paint ③ with pink.

① is blue

Answer

Blue
Let’s compare the smallest triangle with the middle sized triangle.

As you can see, the middle sized triangle is 4 times larger than the smallest triangle.
The same can be said of the biggest triangle and the middle sized triangle
- the biggest triangle is 4 times larger than the middle sized triangle!

Therefore the biggest triangle is $4 \times 4 = 16$ times larger than the smallest triangle.

Answer

16倍
What are the conditions for A and B?

**812 × A = 4 digit number. What kind of number fits to A?**

When the multiplier is greater than 1, A is always a 4 digit number. That means, A cannot be decided at this moment.

**812 × B = 3 digit number. Find out B.**

It becomes 3 digits only when B = 1!

To get the 4 digit answer, what kind of number fits in the pink boxes?

Only 1 can fit in this box to get the 4 digit answer!

The boxes on the left column are all filled!
What number fits in A when $812 \times A = \square \square \square \square$

The answer of $812 \times A$ is a 4 digit number that has 1 in its thousands’ place. Now, let’s check what fits.

To get 1 1 1 1 as an answer...

$A = 2$

All the boxes are full!

Everything fits!

The answer is 9744
Seymour is older than Miranda. ①
Franny is older than Toni. ②
2 kids between Austin and Miranda. ③
Toni is in the middle. ④

Let's draw a picture from ② and ④.

One of them is Franny.

If Franny is the oldest....

According to ③,

Next Page
From 1, now you see that where 🟢 Miranda and 🔴 Austin are.

As you can see, the 5 children of the Campbells are born in the order below:

The answer is 🟢 Miranda.
First of all, Carlo is obviously lying.

This means that Carlo finished in 4th place.

According to Brian, Tanya finished in 4th place.
However, we already know that Carlo finished in 4th place.
This means that Brian is also lying. So Brian must have finished in 3rd place.

As Carlo and Brian are lying, Joanne and Tanya are telling the truth.
This means that Tanya finished in 2nd place.

Answer
2nd place
“Hint 1: E lives right across the street from A”. What does this look like?

“Hint 2: C lives right across the street from F”. What does this look like?

Mix the image you got from Hints 1 and 2, then add this: “Hint 3: F lives in between E and H”.

There are four possibilities.

Now add in this: “Hint 4: G lives in between C and B”.

54 5 Types of Thinking Strategies Drill
From the four possibilities, which one fits “Hint 5: D lives in House VIII”?

Only this one fits!

Now you can see where every family lives.

G lives in House III.

Answer

G
18 Explanation Tennis Tournament

In a tournament, only the winner goes to the next match. The loser cannot play again. This means that the number of matches is same as the number of losers.

At the end of the tournament, we have only one winner. All the other players have lost a match. The number of losers is: \[ 100 - 1 = 99 \]

This means that there are 99 matches in the tournament.

Answer

99 matches

19 Explanation What’s the Date Today?

Pete is 10 years old. Two days ago, he was 9 years old. This means that his birthday is either today or yesterday.

He is turning 11 this year. This means that he has not yet celebrated his birthday this year. Now we understand that it was his birthday yesterday!

Therefore,

his birthday was December 31st, and it is January 1st today. Happy New Year!

Answer

January 1st
To start, let's think about it like this: ‘What if there are 💫 fibber(s)?’
Those who are telling the truth must give the same number.
Now let’s check what everyone says.

Nobody gives the same number.

This means that either 0 or 1 of them is telling the truth.

What if none (0) of them are telling the truth?
That means all 5 of them are fibbing.

But wait! This means E is telling the truth!

Four.

This does not fit.

What if 1 of them is telling the truth?
That means 4 of the 5 people are fibbing.

Only D is telling the truth.

This goes along with the scenario.

As you can see, 1 of them is telling the truth - so 4 of them are fibbers!

Answer

4 of them
What does it mean that you were better than somebody in five out of six events?
It means that you did not come in last place in more than one event.
Since there were 6 events and 6 kids, each person came in last in one event each.
Now, let’s rephrase what they say in the question.

<table>
<thead>
<tr>
<th>1st Place</th>
<th>2nd Place</th>
<th>3rd Place</th>
<th>4th Place</th>
<th>5th Place</th>
<th>6th Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitty</td>
<td>Simon</td>
<td>Tobias</td>
<td>Nana</td>
<td>Hadia</td>
<td>Ricki</td>
</tr>
</tbody>
</table>

When Ricki came in last, where were the other people?

Likewise, you can see the rankings in the other 5 events, too.
When Nana is in 3rd place, who is in 1st place?

The answer is Simon.

Let's count the number of triangles, and express the area of these two rectangles in ratio form.

2 triangles have the same area
Area = 4 cm \times \text{height}

6 triangles have the same area
Area = ? \text{cm} \times \text{height}

Let's divide the area with a red line.

is equal...

3 times the left rectangle!
Both rectangles have the same height.

The right rectangle has 3 times the area of the left rectangle.
So, the base length of the right rectangle (? cm) is 3 times longer than the base length of the left rectangle (4 cm).

Therefore the length of “?” is $4\text{cm} \times 3 = 12 \text{ cm}$.

**Answer**

12 cm

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**Explanation** Rotating Card in the Wind

If the panel is transparent, how does ♫ look behind ♩?
Put four types of marks on ♫ and rotate the panel by $180^\circ$.

Let's put the marks on as follows:
- 2 on the axis (▲▼)
- 2 on the right and left of the axis (★□)

Let's divide ♫ along the axis.

The marks on the axis (▲▼) do not move, while ★ & □ switch positions.

Left-right symmetry along with the axis!
Now you can see what the back looks like.

Put four marks on "", and see how it looks after it rotates by 180°.

When you rotate the panel by 180° around the axis,
• the marks on the axis do not move.
• the marks on the left/right side of the axis switch positions.
Let’s check if this happens this time, too.

The answer is ☐.
Let’s make a table with the statements made by the four.

<table>
<thead>
<tr>
<th></th>
<th>Ian</th>
<th>Fiona</th>
<th>Nicholas</th>
<th>Ysabel</th>
<th>Gareth</th>
<th>Megan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Student 2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Student 3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Student 4</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

These two statements are contradictory.

One of them must be lying.

Students 1 and 2 both must be lying.

< Statement by Student 1 >

“Ian or Fiona or Gareth came late.”

If this is a lie, then

“Ian, Fiona and Gareth were not late.”

< Statement by Student 2 >

“Ian or Nicholas or Ysabel came late.”

If this is a lie, then

“Ian, Nicholas and Ysabel were not late.”

Therefore, it was Megan who came late to the class.

Answer

Megan
Let’s divide the photo frame into 9 parts.

The area of the photo that can be seen is

\[
\left( \frac{9 \times 13 + 1 \times 3}{2} \right) = 60 \text{cm}^2
\]

Answer

60 cm²

What does the actual clock look like?

Label the two hands A, B.
What if A is the little hand and B is the big hand?

A and B cannot indicate the same time - they do not match.

\[ A \text{ is NOT the little hand.} \]

What if A is the big and B is the little hand?

Now, place the clock in the right position and fill out the clock face accordingly.

The clock shows 11:24 !
Compare the area before and after they were stuck together.

When sticking their long sides together...

When sticking their short sides together...

Long sides x 4 cm smaller than before they were pasted together

Short sides x 4 cm smaller than before they were pasted together.

Compare the area of the margins made in the long sides and short sides.

Before we stuck them together...

Both have the same area.

24 cm² x 5 pc.

After we pasted their long and short sides together...

20 cm² larger than

20 cm² difference in the area

can be expressed as...

20 cm² difference!
Find the difference between the length of the long side and the short side.

Since the width of the margin is 1 cm.

Find a rectangle that can fulfill the two conditions given in III and IV.

〈Condition 1〉 Has an area of 24 cm²
〈Condition 2〉 Long side - Short side = 5 cm

List the sizes of the rectangles that fulfill 〈Condition 1〉.
Then, find the one that also fulfills 〈Condition 2〉.

〈Condition 1〉 Has an area of 24 cm²

<table>
<thead>
<tr>
<th>Long side</th>
<th>Short side</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 cm</td>
<td>1 cm</td>
</tr>
<tr>
<td>12 cm</td>
<td>2 cm</td>
</tr>
<tr>
<td>8 cm</td>
<td>3 cm</td>
</tr>
<tr>
<td>6 cm</td>
<td>4 cm</td>
</tr>
</tbody>
</table>

Therefore, the short side of the rectangle is 3 cm.

Answer

3 cm
Look at the last sentence of the question.

How much do you have to spend to get three marbles of the same color?

When will you have collected three marbles of the same color?

For example, let’s see when you will have collected three red marbles. You may have three red marbles after you tried....

- 3 times.  Need 30¢.
  1 2 3
  You are not always this lucky - you may get a blue marble.

- 4 times.  Need 40¢
  1 2 3
  You cannot be 100% sure - you may get two blue marbles.

- 5 times.  Need 50¢.
  1 2 3
  You have collected either 3 red marbles or 3 blue marbles for sure! e.g.
  1 2 3
  By this time, you have collected 3 marbles of the same color!

As you can see, you need to spend at least 50¢ to get three marbles of the same color.

Answer

50¢
Let’s rearrange the sandwich triangles.

![Diagram of sandwich triangles]

Make pairs and flip them over.

Square!

Compare the areas of two squares.

\[
\begin{align*}
36 \text{ cm}^2 & \quad - \quad 25 \text{ cm}^2 \\
& \quad = \quad \text{The area of 4 sandwich triangles.}
\end{align*}
\]

Now you see that the area of 4 sandwich triangles is \(11 \text{ cm}^2\).

Find the area of the empty square.

\[
\begin{align*}
25 \text{ cm}^2 & \quad - \quad 11 \text{ cm}^2 \\
& \quad = \quad 14 \text{ cm}^2
\end{align*}
\]

The area of the empty square is \(14 \text{ cm}^2\).

Answer

\(14 \text{ cm}^2\)
What kind of balls are always sorted to the left?

Firstly, let's check A.

Half of the balls that pass A go to C and they all have even numbers (multiples of 2).

Next, let's look at C.

The half of the balls that pass C go to F. That means \( \frac{1}{4} \) of the balls that pass A go to F and they are all labeled as multiples of 4.

Next, let's look at F.

The half of the balls that pass F go to exit ‘d’, and \( \frac{1}{8} \) of the balls that pass A go to exit ‘d’. The balls that go to exit ‘d’ are all labeled as multiples of 8.

Answer

8 balls
5 Types of Thinking Strategies Drill