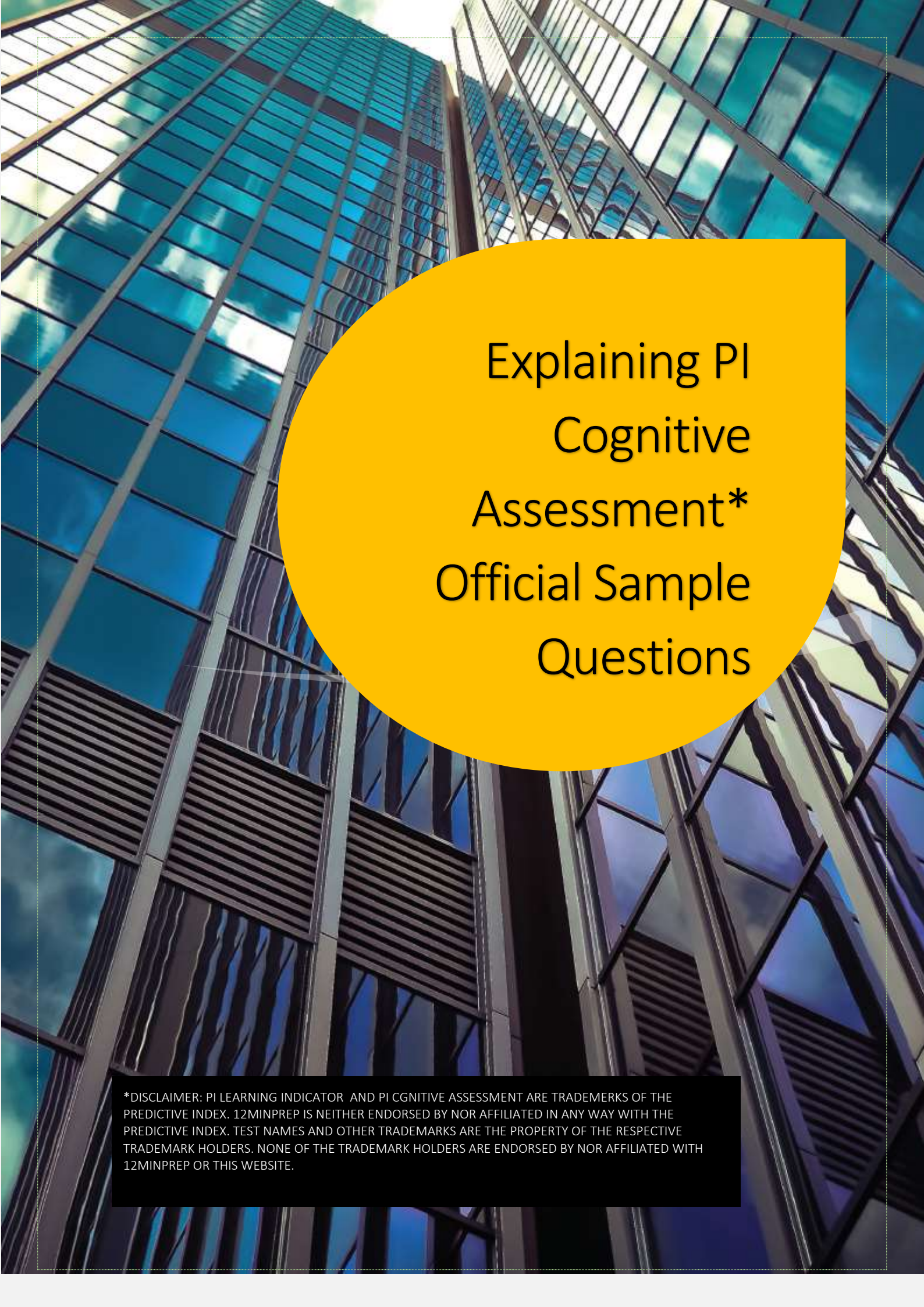

Explaining PI Cognitive Assessment* Official Sample Questions

12MINPREP

Hi there, this PDF provides detailed **Explanations and Solving Strategies** for official PI Cognitive Assessment questions, as seen on this sample questions file provided by the Predictive Index, owners of the test. This test was formerly known as the PLI (Professional Learning Indicator) and is also known as the Predictive Index Learning Indicator (PI LI) Test.

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SAMPLE QUESTION 1: VERBAL ANALYSIS

Answer: C | Difficulty: Intermediate

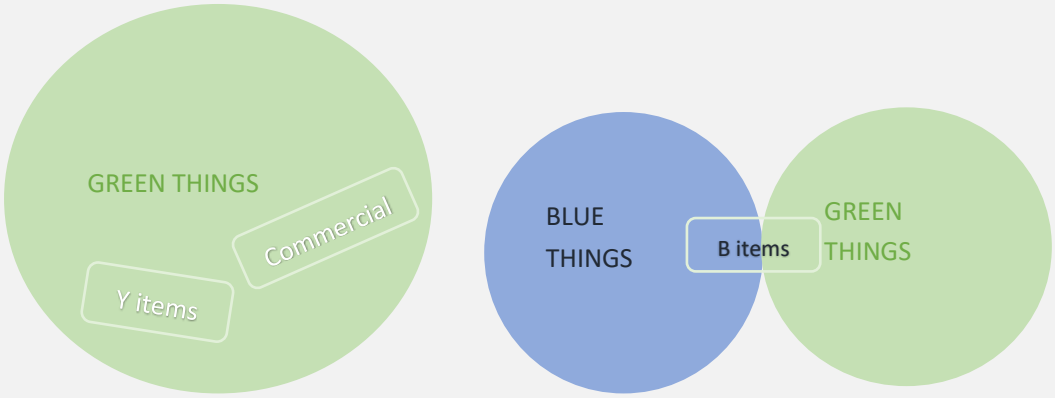
Solution: Let's try and turn those sentences into something more digestible.

"All Y items are green" can be written as: Y → Green

"B items are always blue or the same color as Y items" turns into: B → blue/green

"Only green items are for commercial use" turns into: Commercial use → green

And in illustrations:



The conclusion states that: B → commercial use

But we can see in the illustrations that items for commercial use can only be green, while B items can also be blue. There we go, conclusion refuted, and we pick *Incorrect* as the right answer choice, which is answer C.

Now how on earth will you have time to scribble all those things during the PLI test? There are 12 minutes in total during which you're supposed to answer up to 50 questions, and reading this explanation already took like 5 minutes. And how are you expected to get better at this when the official PLI sample test only contains two such question types???

From my experience, If you practice around 30-50 such statements, it will become a much easier process. You might need a pen and piece of scrap paper to jot it down or you might even feel confident enough to draw those mental maps in your head!

SAMPLE QUESTION 2: LOWEST VALUE

Answer: D | Difficulty: Intermediate

Solving tips for this question type:

1. You must know how to subtract and add fractions quickly.
2. A larger denominator represents a smaller fraction. Thus, $\frac{1}{3}$ is smaller than $\frac{1}{2}$.
3. You can look at $\frac{1}{2}$ as 2 times smaller than 1, at $\frac{1}{6}$ as two times smaller than $\frac{1}{3}$ etc.
4. You must memorise and internalise the decimal representations of popular fractions.

Solution: Looking at answer option A, no operation is required here, so we quickly move on to compare the remaining answer options to answer A.

Answer option B: $\frac{1}{3} - \frac{1}{6}$. as we saw before, $\frac{1}{6}$ is a half of $\frac{1}{3}$. So, by subtracting a half off $\frac{1}{3}$ we're left with $\frac{1}{6}$.

Answer option C: $\frac{2}{3} - \frac{1}{7}$. There's the long and less recommended way of using a common multiplier. 3 and 7 have a common multiplier which is 21.

$\frac{2}{3} - \frac{1}{7} = \frac{(2\times7)-(1\times3)}{21} = \frac{11}{21}$ = almost a half

Shortcut way if you know percentages by heart: 66%-14%= 51% = almost a half

Answer option D: $\frac{1}{3} - \frac{1}{4}$ The long way, which I do not recommend is:
$\frac{1}{3} - \frac{1}{4} = \frac{(1\times4-1\times3)}{12} = \frac{1}{12}$. Looks like a small number to me :)

Shortcut way if you know percentages by heart: $\frac{1}{3} = 33\%$ and $\frac{1}{4} = 25\%$ and (33%-25%)=8%

Answer option D has the smallest value and is therefore the correct answer.

SAMPLE QUESTION 3: SHAPE SERIES

Answer: B| Difficulty: Intermediate

Two tips before we start:

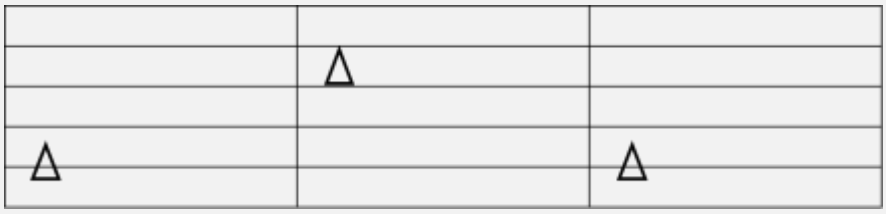
1. Break each image into a few parts, and look what happens to each part **separately**, instead of analyzing the entire image.
2. Focus on finding the rules, and only then move on to inspect the answer options.

💡 **Solution**: This is a very popular question type that is seen across all cognitive ability tests. We will learn how this can be done in a way that will save as much time as possible.

We are presented with a 6-row grid, and four shapes are moving across this grid from one frame to the next. For simplicity, we will be isolating each shape and combine its movement on a single grid, so show the pattern more clearly.

Through this isolation method, you will notice that the key to solving this question is to isolate each shape in the grid and track its progress, and in doing so, looking at two movement types: Up-down(↕) and Right-Left (↔).

Starting with the white triangle:



The triangle moves from an overriding position on the 2nd row, to an exact position between rows 4 and 5, completing two and a half steps. Then, back to the same spot on the 2nd row. This appears to be a repetitive, close-ended pattern and we should thus expect this triangle to appear in a similar location as in the second frame (between rows 4 and 5).

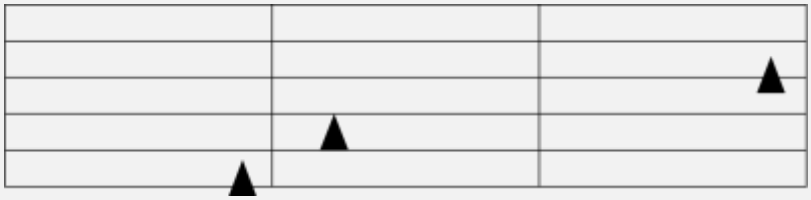
Now we turn to the answer choices and look for a frame in which the same prediction appears. Luckily, there is only one possible answer option with that behaviour, and that's **option B, which is the correct answer**.

For the sake of practice, let's also look at the remaining patterns:

The black rhombus seems to move in half steps on the vertical axis, and from far left to far right in the horizontal axis. We would expect it to move rightwards in the next frame, and to be placed equally on the third line, just as it does in answer B.

Looking at the white rhombus, it also seems to progress in half steps from bottom to top, and slowly from left to right in the horizontal axis. Without looking at the answer options yet, we can say that this rhombus could either reach the far-right corner of the grid, being placed on the 6th row (as in answer B), or alternatively, it could just go back to its place in the first frame and complete a "closed-circle" pattern.

Lastly, looking at the black triangle, this pattern is a bit harder to decipher.



The black triangle is changing places both vertically and horizontally. It climbs up the table in one and a half step intervals and moves from right to left along the rows of the table. According to this pattern, we expect it to move leftwards again, exactly in between the two rows, as seen in answer B.

SAMPLE QUESTION 4: COMMON FEATURES

Answer: B | Difficulty: Easy

Tip: Only one of the answer options is Not sharing the common feature, so there are five images that share something in common, and not just two! Therefore, make sure to keep eye contact with the answer options when locking down on the answer, because they may help you identify the common feature.

Solution: We are presented with two images, each comprising two polygons that have one point of contact. At first glance, I immediately noticed the touch point between the shapes. But when looking at the answer options, they all had that feature as well.

I tried looking further into the nature of the contact point in the first pair of images, and I noticed that for both images, the part that touches the other shape is not the same. On the left side, the vertex of the rhombus touches the middle of the hypotenuse of the triangle. But in the image on the right, two vertexes formed the point of contact. I tried moving on and picking other features...On the left, a three-sided shape touches a four-sided shape. There's a difference of 1. On the right, a four-sided shape touches a moon-like shape, which has two vertexes, so I can regard it as a two-sided shape. Here there's a difference of 2. Since there's no consistency, this cannot be the common feature. Moving on to look for another common feature, this is where I noticed that one of the answer options **has three shapes in it, rather than two**. This made me realise I didn't follow the tip I mentioned before :). Thus, once you see answer option B, it's quite easy to pick it as the correct answer choice.

SAMPLE QUESTION 5: WORD ANALOGY

Answer: D | Difficulty level: Easy

To solve analogies questions effectively, we need to:

1. Try and define the relationship between the words through a clear sentence/statsement.
2. Note the order of words and treat it like a mathematical ratio: The ratio of word A to word B is not like the ratio of B to A!

Solution: In this question, the ratio is *Water:Cup* and we could say that *Water* is placed in a *Cup*, keeping the same order of words as given in the analogy. We could also say a *cup* is a container for *water*, but we will have to remember that we described the ratio in the opposite direction.

The only pair of words that conforms with our definition is:

Flowers are placed in a **vase**, which is answer D.

SAMPLE QUESTION 6: ANTONYM

Answer: D | Difficulty: Easy

Solution: The opposite of *extensive* is *restricted*.

While there's not much to say about these questions, other than pray to the lord that your vocabulary is rich enough to answer all those questions correctly. That alone should win you probably 3 to 7 questions. The PLI test can be taken in different languages, so it's not necessarily English that you will be tested in.

There's one tip I can give you: Even when looking at the sample questions provided in official PLI documents, the correct antonym is not always the best antonym you would think of, nor would a dictionary. So, it's also about finding the closest thing to an antonym from the options given.

SAMPLE QUESTION 7: SHAPE SERIES

Answer: B | Difficulty: Easy

Here we have a series of four items, rather than three. It starts very simple with only one shape, which makes the pattern recognition process easier.

1. One arrow with a single head. ↑
2. The arrow turns into a two-headed arrow ↕.
3. Another arrow joins in with a single head ↑, and it faces the opposite direction of the first arrow.
4. The new arrow is now double headed ↕.

Conclusion: a new, one headed arrow ↑ is added to the frame each time the previous arrow gains two heads ↥. Therefore, we will expect a frame with three arrows in total. Answer option B fulfils this rule and is therefore the correct answer choice.

SAMPLE QUESTION 8: NUMBER SERIES

Answer: A | Difficulty: Intermediate

Before moving on to the solution, make sure to read this extensive article about number series to get some solving tips and examples.

Solution:

Series	4	11	25	53	?
Difference		+7	+14	+28	+(28×2)
Logic		X2	X2	X2	
The differences between the terms form a series by themselves, where each number is multiplied by 2. 28*2=**56** and **53+56=109**					**109**

SAMPLE QUESTION 9: WORD PROBLEM

Answer: A | Difficulty: Intermediate

Tip: In word problems, I recommend reading one sentence at a time and seeing if the sentence can be turned into a short formula/equation.

Solution: Reading the second sentence, we need to calculate 25% of 80,000. Then, we need to divide this number by 5 (5 days equally spread), to get to a single day's value.

Answer=(25%×80,000)/5

Notice that the question specifically tells us that we'll be delivering the same amount each day: *mail* $\frac{1}{5}$ *of this amount each day*. That's a $\frac{1}{5}$ of 25% each day, so it divides perfectly to units of 5%. Thus, we're asked to find 5% of 80,000.

Here you can use my 10% rule: To get 10% simply divide the number by 10, or move the decimal point one place to the left:

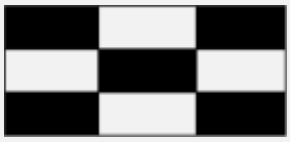
10% of 80,000 =80,000/10= 8,000. Now to get to 5% we divide by 2:

8000/2= 4000 which leads us to answer choice A.

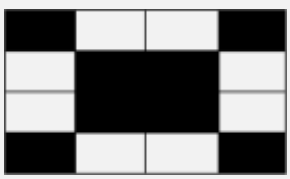
SAMPLE QUESTION 10: ANALOGY

Answer: B | Difficulty: Intermediate

Solution: The first image comprises 9 cells (3x3), colored intermittently in black and white.



The next paired image has more cells in it, the centre of the frame is now filled with four cells while the other cells remained in the same location.



Even before looking at the answer options, we can already determine that the relation here is of increase in the number of cells, and specifically, an expansion of the black centred area, while all other colored cells remain in the same position.

Only answer option B fulfils this pattern and is therefore the correct answer.

Notes: There is no clear mathematical rule for the expansion. We moved from 9 cells to 16. The middle cell was originally one ninth (1/9) of the entire frame, while in the second image 16 cells expanded to 25, and there were 9 middle cells (9/25). Furthermore, while the first pair of images presents a general increase in image size, the second pair of images does not show that feature.

Sample question 11: Verbal analysis

Answer: A | Difficulty: Intermediate

Solution: Compared to the previous verbal analysis question in the file, this question appears to be easier, because we're only presented with two statements, rather than three. On the other hand, the phrasing here is very misleading. It is so misleading that I fell for it on my first attempt. I hope that with the below explanation and my own story, you will be able to avoid such mistakes on your real test.

Let's jot down the rules in a visual way:

C1 →X&Z

C2 → X&Z

Y → Not when Z (which is equivalent to Z → no Y)

We can then combine the formulas:

C1/C2 → X&Z→ no Y

Upon buying Product Z, one will **never** be sold Product Y. In other words, it's enough to have product Z in your cart to cancel out any possibility of having product Y. And this applies to both customer 1 and 2, as they both have product Z in their cart.

This brings us to conclude that customers 1 and 2 will never be sold product Y and the answer is *Correct*.

TIP: I must admit that at first glance I read this question differently, and as a result I arrived at the wrong answer! I thought that while it's true that product Y is never sold to customers who buy product Z, it's not necessarily because of a rule that forbids this from happening, but rather because of the behaviour of customers in the past (kind of like consumer statistics). Then I also thought, who said customers 1 and 2 buy products X and Z at the same time? Maybe they buy product X first, and then a week later they come and buy product Z?

These hypothetical situations that I made up got me thinking that maybe one who buys product X in addition to Z might still get product Y?? However, I wasn't given any information in the statements to prove me right. I went on and marked *Cannot be determined based on the information available*. 😯

So where did I go wrong? I went too far with turning these facts into a real story with additional scenarios that might be real in the real world, but not real/valid in the world of logical statements. I also ignored, or refused to acknowledge, the full meaning of "*is never sold", which basically means "this does not happen, period*!" it's very different to *customers who buy Z never buy Y, which is the* ***interpretation*** *I made on this sentence.* What can be learnt from this? In these questions stick to the rules, black or white!

SAMPLE QUESTION 12: NUMBER SERIES

Answer: D | Difficulty: Intermediate

Solution:

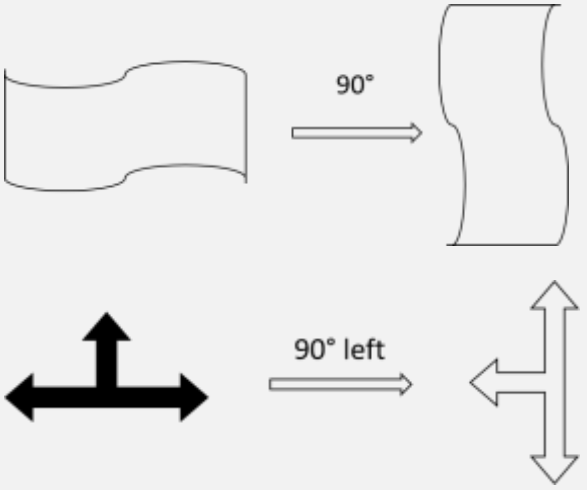
Series	3	7	12	18	25	?
Difference		+4	+5	+6	+7	
Logic			+1	+1	+1	
The differences between the terms form a series by themselves (+4, +5, +6, +7) and the next term in this sub-series should be +8. We add 8 to the last term in the original series: 25+8=**33**						**33**

SAMPLE QUESTION 13: SHAPE ANALOGY

Answer: C | Difficulty: Intermediate

Solution: Looking at the first image, we see a white banner with a black left-up-right arrow placed on it.

The paired image has the banner rotated 90 degrees and we don't know if this was a clockwise or counter-clockwise rotation. In addition, a similar left-up-right arrow is placed on it, only this time it's white and was also rotated 90 degrees to the left.



Looking at the first image in the second pair and trying to predict the missing image, we expect to see the pentagon rotating 90 degrees (either left or right) and the black arrow inside should turn white and point upwards because of the 90-degree rotation to the left:

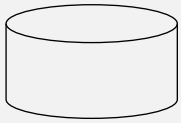
This leads us to answer option C.

SAMPLE QUESTION 14: COMMON FEATURES

Answer: C | Difficulty: Advanced

Solution: The first two shapes are very different from each other, in two ways. A two-dimensional triangle (3 sides), and a three-dimensional square, i.e. cube (6 sides). Both shapes are shaded to the left, with the light coming from the back of the shape. This feature is hard to spot. Looking at the answer options, there's a mix of two- and three-dimensional shapes, all of which are shaded.

Answer option B immediately captures the eye. It's a three-dimensional cylinder, which is the only rounded shape in the question. It's quite tempting to choose that one, and I'm sure many would under the time constraints of the PLI.



But, if you look at the shading pattern, you will notice that shape C is the only one that is shaded to the right:

And this is what makes this question more difficult. We have two potential features to choose from: round vs. straight lines and opposite shading patterns. So why isn't the round vs. straight lines the correct feature?? Simply because there's no way to settle/ignore the shading feature. The *round vs. straight lines* observation can be ignored in the sense that the presented shapes in the question are of different kinds (straight, curved, two-dimensional, three-dimensional). The shading feature appears only once.

SAMPLE QUESTION 15: WORD PROBLEM

Answer: A | Difficulty: Easy

Solution: This is a very basic deduction question. We have 94 as the starting number and then are asked to deduct (11+7+3+11).

94-(11+7+3+11) = 94-32 = 62, which is answer choice A.

SAMPLE QUESTION 16: LOWEST VALUE

Answer: C | Difficulty: Easy

Solution: In this question, two out of four answer options are in the form of a decimal. It is easier to estimate the size of a fraction in its decimal or percentage form so we will try writing the two remaining fractions as percentages as well.

0.45 is 45%

$\frac{3}{5}$ which is $3 \times \frac{1}{5}$ or 60%. Even if you don't know that $\frac{3}{5}$ is 60% right away, it is possible to tell that this number is bigger than a half.

$\frac{1}{4}$ is 0.25 or 25%

0.35 is 35%

$\frac{1}{4}$ has the smallest value.

SAMPLE QUESTION 17: ANALOGY

Answer: | Difficulty: Intermediate

Using the thumb rules I provided above, let's try to do this one quickly.

Solution: Each image consists of a triangle and a circle. The general position of the shapes in respect to one another does not change at all. The triangle switches colors from white to black, and the circle also switches colors, from black to white. Another way to phrase this would be, the inner shape's color has now taken over the remaining of the bigger shape, and vice versa. Notice this small nuance. I just described this pattern without specifying the color of the shapes. This type of rule finding is what leads to the correct answer, and faster.

We need to look for the above change in the answer options. Only answer option B fulfills this condition, and it does it for the inner shape as well, which now turns completely white.

I am positive that some people would have marked D as the correct answer choice, just because they would phrase the rule in connection to a specific set of colors, rather than looking at the rule from a different, more general perspective.

This is the key to solving these questions. Generalising the rule as much as possible.

SAMPLE QUESTION 18: ANTONYM

Answer: C | Difficulty: Easy

Solution: The opposite of *conclusive i*s Ambiguous

SAMPLE QUESTION 19: ANALOGY

Answer: D | Difficulty: Intermediate

Solution: Tired is an adjective that describes fatigue and sleep is a verb that is used as a reaction to being tired. This may sound like a cumbersome phrasing, but this phrasing process is very important, as it safeguards you from traps.

Applying the same rule on *hungry,* we should be selecting *eat,* and not *food, which* is the perfect trap when you're in a hurry and watching the 12-min clock running out of time.

SAMPLE QUESTION 20: SHAPE SERIES

Answer: C | Difficulty: Intermediate

Solution:

We need to focus our eyes on a single object each time and describe its behaviour through the frames.

Black circles are moving counter-clockwise through the corners of the square, while white circles are moving clockwise. Detecting those two patterns allows us to choose C as the correct answer.

That's it. I hope these explanations and tips were helpful. For additional practice resources for the PI Cognitive assessment please visit 12MINPREP.