Logic Puzzles

Print or copy double-sided and trim to make cards.
Check that the puzzles and answers align correctly.

The Waiter

Three men in a cafe order a meal the total cost of which is $15. They each contribute $5. The waiter takes the money to the chef who recognizes the three as friends and asks the waiter to return $5 to the men.

The waiter is not only poor at mathematics but dishonest and instead of going to the trouble of splitting the $5 between the three he simply gives them $1 each and pockets the remaining $2 for himself.

Now, each of the men effectively paid $4, the total paid is therefore $12. Add the $2 in the waiters pocket and this comes to $14... **Where has the other $1 gone from the original $15?**

The Father

A mother is 21 years older than her child. In exactly 6 years from now, the mother will be exactly 5 times as old as the child.

Where's the father?

The Boxes

There are three boxes. One is labeled "APPLES" another is labeled "ORANGES." The last one is labeled "APPLES AND ORANGES." You know that each is labeled incorrectly. You may ask me to pick one fruit from one box which you choose.

How can you label the boxes correctly?

The Waiter

ANSWER:

The payments should equal the receipts. It does not make sense to add what was paid by the men ($12) to what was received from that payment by the waiter ($2)

Although the initial bill was $15 dollars, one of the five dollar notes gets changed into five ones. The total the three men ultimately paid is $12, as they get three ones back. So from the $12 the men paid, the owner receives $10 and the waiter receives the $2 difference.
$15 - $3 = $10 + $2

Copy answer to the back side.

The Boxes

ANSWER:

Pick from the one labeled "Apples & Oranges." This box must contain either only apples or only oranges.

E.g. if you find an Orange, label the box Orange, then change the Oranges box to Apples, and the Apples box to "Apples & Oranges."

The Father

ANSWER:

With the mother. If you do the math, you find out the child will be born in 9 months.

The Socks

Cathy has six pairs of black socks and six pairs of white socks in her drawer.

In complete darkness, and without looking, **how many socks must she take from the drawer in order to be sure to get a pair that match?**

Mary's Mum

Mary's mum has four children.
The first child is called April.
The second May.
The third June.

What is the name of the fourth child?

The Farmer

A farmer has a fox, goose and a bag of grain, and one boat to cross a stream, which is only big enough to take one of the three across with him at a time. If left alone together, the fox would eat the goose and the goose would eat the grain.

How can the farmer get all three across the stream?

The Robbery

There was a robbery in which a lot of goods were stolen. The robber(s) left in a truck. It is known that:

1. Nobody else could have been involved other than A, B and C.
2. C never commits a crime without A's participation.
3. B does not know how to drive.

So, is A innocent or guilty?

Mary's Mum

ANSWER:

Mary's mothers fourth child was Mary herself.

The Socks

ANSWER:

Socks do not come in in left and right, so any black will pair with any other black and any white will pair with any other white. If you have three socks and they are either colored black or white, then you will have at least two socks of the same color, giving you one matching pair.

The Robbery

ANSWER:

A is guilty.

The Farmer

ANSWER:

Before solving this problem encourage youth to draw a picture.

The first trip requires the farmer to take the goose across, because it cannot be left with either grain or the fox. On the next trip, the farmer may take either fox or grain, but then he must bring back the goose. On the third trip, the farmer takes the remaining item, but leaves the goose on the first shore. He then makes a fourth trip to bring the goose. Thus, four trips are required, and the goose ends up crossing three times.

How Old Are You?

When asked her 3 children's ages, Mrs. Muddled said that Alice is the youngest unless Bill is, and that if Carl isn't the youngest then Alice is the oldest.

Who is the oldest and who is the youngest?

Who's Fishing?

Two fathers and two sons went fishing. Each caught exactly one fish and yet there were only three fish caught.

Why?

Directions

Three men were standing in a row, all facing the same direction, so that there was one in back who could see the two in front of him, one in the middle, and one in front who could not see either of the other two. There were three blue and two red hats. One hat was placed on each man, without them seeing which two were left over. Each man was told the total number of each color of hat. First the man in the back was asked if he could deduce what color hat he had on, but he said he couldn't. Neither could the man in the middle, when he was next asked. But then man in the front, who could see neither of those behind him but could hear their answers, correctly deduced by logic what color hat he was wearing. **What color was it and why?**

Connect the Dots

How can you connect nine dots in three straight rows of three with four straight lines without raising the pencil from the paper?

Who's Fishing

ANSWER:

This is a classic in creative thinking. Many problems are set up to get you to expect one thing and then shock you be having the obvious be false. At first we think that two fathers and two sons means four people. But each caught a fish and yet only three fish were caught. Hence, there were only three people. How could that be? It must be that one of the three people fulfills a dual role of being both a father and a son. So it must have been a grandfather, a father and his son who went fishing.

How Old Are You?

ANSWER:

Draw a grid on the board.

Since the youngest may be either Alice or Bill, we can deduce that Carl cannot be the youngest. 1

	ALICE	BILL	CARL
OLDEST	0 2	X	X 4
MIDDLE	X 3		0
YOUNGEST	X	0 4	X 1

Next, if Carl isn't the youngest, then Alice is the oldest. So Alice must be the oldest. 2

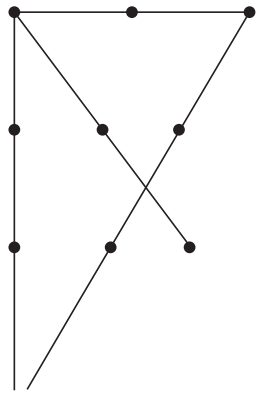
Now we can fill in the rest of the first column and first row because no one else can be oldest. 3

Finally we can fill row three and column three which both have only one remaining cell available. 4 *Thus, Alice is oldest, Carl is Middle and Bill is the youngest.*

Connect the Dots

ANSWER:

This calls for a creative answer. It requires going beyond the end of the square of nine dots:



Directions

ANSWER:

Many people really struggle with this puzzle, but it is a totally straightforward problem. The trick is to REALLY put yourself in the place of these men.

Okay, here goes. Suppose you are the man in the back, could you deduce what color hat you have on by looking at the two in front of you? Well, if they were both red, you would know you had a blue hat on. That man didn't know, and so if we assume he had at least a little sense, we can deduce that the two hats in front were not both red, that is, at least one of them was blue. Most people get this far in the puzzle and are then stumped because they think there is no way to tell which one is blue, or perhaps both. The trick to solving the puzzle is to now put yourself in the place of the second man. If you were in his shoes and heard the first answer, you would also know that at least one of that front two hat was blue. If you saw a red hat in front of you, you would know you had a blue hat. But he did not know. The only thing that could have prevented him from knowing is that the first hat must have been blue.

Explorer

An explorer wishes to cross a barren desert that requires 6 days to cross, but one man can only carry enough food for 4 days.

What is the fewest number of other men required to help carry enough food for him to cross?

The Path

A traveler meets a local in the jungle at a fork in the trail, where only one path goes to the village. The traveler does not know which path to take and knows that the local could be either from the tribe of Truth-tellers, who always tell the truth, or from the Liars, who always lie.

What is one question he could ask the native to discover the path to the village?

Crossing the River

How can three mice and three cats cross a river in a canoe that holds at most two animals, if the cats must never outnumber the mice on either side?

The Bobber

You can paddle your canoe seven miles per hour through any placid lake. The stream flows at three miles per hour. The moment you start to paddle up stream a fisherman looses one of his bobbers in the water fourteen miles up stream of you.

How many hours does it take for you and the bobber to meet?

The Path

ANSWER:

The idea is to find a question that either local will answer the same. That requires that the question include some sort of double negative, which will cancel out the fact that he may be lying. One example is "If you were from the other tribe, which path would you say goes to the village?" The truth teller will point to the wrong path, and so will the liar (think about it). So whatever path is pointed to, take the other one.

Explorer

ANSWER:

First, if each of the men ate his own food then even if we begin with a hundred men, each can only get four days into the desert. Clearly the idea is to get only the one explorer across and have the helpers return back. By simply trying a few ideas the answer is clearly that two other men are required.

The first helper only goes on day into the desert. He feeds the other two men during the first day, so that at the beginning of the second day, he only has one day rations left. So he goes back to camp. On the second day, the second helper feeds himself and the explorer. On the beginning of the third day the helper now has two days rations left so he heads back. The explorer is two days into the journey and still has all four days of his food left, so he continues on alone.

The Bobber

ANSWER:

Ignore the speed of the stream, as the cork will be carried along at three miles per hour as will you. It takes two hours to travel fourteen miles, at a rate of seven miles per hour.

Crossing the River

ANSWER:

Send two cats over first and have one bring back the canoe. Then repeat that, and then send two mice across and have one bring back a cat. Then send both the remaining mice over, and have a cat return the canoe. Now all the cats are on the near side of the river, and the mice on the far side. Now just have the cats bring the rest over in two trips and you're done.