Portia’s I.Q.

(Or: How clever is a jumping spider?)

Student: Another play?

*Tutor: Yes.*

What’s this one about?

*Intelligence.*

Intelligence?

*Yes.*

Oh.

*I was thinking about spiders.*

Spiders?

*Yes.*

Oh.

*I was thinking about how intelligent spiders are.*

And how intelligent are they?

*Well, on the whole, probably not very intelligent.*

But?

*But?*

There’s always a ‘but’.

*OK, so there is one kind of spider …*

An intelligent spider?

*Yes.*

More intelligent than other spiders?

*Much more.*

Really?

*It seems so.*

Why?

*Why?*

Yes, why?

*Why what?*

Why is this spider more intelligent?

*Than other spiders?*

Yes.

*Well, it lives by hunting.*

Hunting?

*Other spiders, mainly.*

Hunting other spiders?

*It’s a jumping spider.*

And?

*Jumping spiders mainly hunt other spiders.*

But why would that make them intelligent?

*Well, a hunter needs to think.*

How do you mean “think”?

*Good question.*

What does “think” mean?

*Well, plan, maybe.*

Plan?

*A hunter has to plan.*

I suppose.

*Well, it has to catch its dinner.*

Yes, of course.

*Without being eaten itself.*

How do you mean “without being eaten itself”?

*Well, all spiders are dangerous.*

Are they?

*Oh yes, all spiders bite.*

Mmmm...

*All spiders have big fangs.*

Yes.

*Very nasty fangs.*

And they inject venom.

*That’s how they kill their prey.*

So all spiders need to watch out.

*They do.*

And especially spiders which hunt.

*Especially if they hunt other spiders.*

Exactly.

*Like our little hunting spider.*

Yes.

*It’s called a jumping spider, actually.*

A jumping spider?

*Yes.*

Because it jumps, I suppose?

*That’s how it catches other spiders.*

By jumping on them?

*Yes.*

Dangerous work!

*Very dangerous work.*

Is that where intelligence comes in?

*Exactly.*

That’s where “thinking” comes in?

*Yes.*

But how do you know that?

*Know what?*

That our jumping spider is intelligent?

*Because she thinks.*

And how do you know she thinks?

*Because she makes a plan.*

We’re going round in circles, now!

*We are a bit.*

Let’s start again.

*OK.*

How do you know she thinks?

*Maybe it would help if I told you how she catches her dinner.*

In the wild?

*Yes.*

OK.

*Then you’ll see.*

OK.

*She hunts spiders much bigger than herself.*

In the wild?

*Yes. So she needs a plan of attack.*

Right.

*The spider is called Portia, by the way.*

Portia?

*Yes. Portia.*

I thought you said “jumping spider”.

*Well, she is a jumping spider.*

But?

*But she’s a special kind of jumping spider.*

Called Portia?

*Yes.*

That’s her family name?

*Yes. In Latin.*

OK. Go on.

*Well, Portia is a small spider.*

How small?

*About the size of a raisin.*

Right.

*With very big eyes.*

Oh?

*Eight eyes.*

Eight of them?

*Portia has very good eyesight.*

Right.

*Now, imagine she spots another spider.*

OK.

*An ordinary spider.*

OK.

*Sitting by its web.*

Waiting for a fly?

*It’s just sitting there.*

Waiting.

*It’s a big spider.*

Bigger than Portia?

*Much bigger.*

And?

*Portia will sit for a while.*

Just sit there?

*She’s checking the situation out.*

Checking the situation out?

*Yes.*

But what does “checking the situation out” really mean?

*She’s thinking how to catch that big spider.*

Without being caught herself.

*Yes. Exactly.*

You say she’s “thinking”.

*Yes.*

But how do you know?

*Because she’s making a plan.*

But how do you know she’s making a plan?

*Because she’ll show us.*

Show us?

*Yes.*

How?

*Well, she won’t just jump on the big spider.*

Why not?

*Too dangerous.*

Why?

*Because the big spider will see her coming.*

And have its fangs ready?

*Far too dangerous for little Portia.*

So what will she do instead?

*She’s got to surprise the big spider.*

How will she do that?

*Well, first she’s got to spend some time watching.*

And you think she’s thinking.

*Portia is building up a mental picture.*

I’m not so sure.

*A mental picture of the whole situation.*

How do you mean, “The whole situation”?

*She’s making a mental picture of the big spider and everything around it.*

Mmmm…

*And making a plan of attack.*

But how can you tell that’s what she’s doing?

*Because of what she does next.*

Which is?

*Portia moves away from the big spider.*

Away from the big spider?

*Yes.*

Right.

*Then she moves in a big, wide circle.*

A big, wide circle?

*So as to come up behind the big spider.*

Moving round where she can’t be seen?

*Staying out of sight of the big spider.*

Right.

*So she’s following a plan.*

How do you know she’s following a plan?

*Because she can’t see the big spider.*

Right.

*She moves round a big circle where she can’t be seen.*

So?

*So Portia must be working from memory.*

Working from memory?

*She can’t see the big spider from where she is.*

No.

*So she’s moving along a route she has in her mind.*

And which she has remembered, I suppose.

*Exactly. She’s working from memory.*

So she must have a route in her mind.

*Yes.*

And she must have planned it.

*She planned it while she was watching the big spider.*

Checking the situation out.

*In other words, she must have been thinking.*

I suppose so.

*It may take Portia a couple of hours.*

Two hours?

*To get round behind the big spider.*

Two hours?

*She has to move carefully, without being seen.*

And all this time Portia is working from memory?

*Must be.*

Mmmm…

*She can’t see the big spider.*

No.

*So we know she has a plan.*

Yes. OK.

*And eventually she appears again.*

But now she’s behind the big spider.

*Exactly where she wanted to be.*

Behind the big spider.

*Which doesn’t see her.*

No.

*She’s come round behind it.*

So she can jump on it.

*Wham!*

And kill it.

*From behind.*

Before it knows what’s going on.

*Exactly.*

Dinner!

*But to get there, Portia had to have a map.*

I suppose so.

*In her mind. She must have.*

A map in her mind.

*A map of the whole situation.*

A map of where the big spider was.

*And a map of the area around it.*

And a plan of her route.

*Places she would be hidden.*

All the rocks and stuff.

*Things she could hide behind.*

She must have had a map like that in her mind.

*Otherwise, how could she get round behind the big spider?*

Mmm..

*Without being seen, I mean?*

So you think Portia was thinking?

*Must have been.*

When she sat watching the big spider?

*Must have been.*

Because she wasn’t just making a map in her mind, was she?

*No. I don’t think she was.*

She was also planning a route.

*To get round behind the big spider.*

A route where she wouldn’t be seen.

*Exactly.*

If we did all that we would say we were “thinking”.

*Of course we would.*

So I suppose we have to say Portia was too.

*I think we do.*

And Portia thinks like that because she’s a hunter?

*Yes. She has to.*

The big spider doesn’t have to think.

*Not really, no.*

It can just sit there.

*Waiting for a fly to hit its web.*

So maybe it doesn’t think at all.

*Portia has to, though.*

She has to hunt.

*And a hunter must have a plan.*

Mmmm…

*So Portia does seem to think.*

Mmmm…

*Just very slowly!*

Oh?

*Portia thinks very slowly.*

How do you mean?

*She might sit, checking the situation out, for a long time.*

How long?

*Anything up to an hour.*

An hour?

*Maybe*.

That’s not so intelligent, is it?

*Oh, I don’t know.*

Taking an hour to think up a plan?

*Well, I agree it’s not very quick.*

Not very quick?

*Alright then, it’s very slow.*

But she did get there.

*Well, yes, she did.*

In the end.

*Yes.*

And I suppose she was thinking.

*I think she definitely was.*

It’s a funny thing, isn’t it?

*What?*

Intelligence.

*How do you mean “funny”?*

Well, what is it?

*I think it’s being able to think.*

And decide stuff?

*Yes. Work new stuff out.*

Portia had to work stuff out.

*And it was new stuff.*

It was all new to her.

*So she had to work it out.*

Mmmm…

*And decide what to do.*

So I suppose it’s not a matter of speed.

*No. I don’t think it is.*

I think she was thinking about it.

*And she made decisions.*

Yes. Good decisions.

*And she caught that big spider.*

In the end.

*Using her plan of attack.*

She got her dinner.

*In the end.*

It’s still a funny thing.

*Portia’s intelligence?*

Taking an hour to make a plan.

*It’s a long time, isn’t it?*

Portia does think, I think.

*I think so too.*

She just thinks slowly!

*Yes. You can say that again!*