

I think your desks should be completely cleared off except for a pencil. That is a good place to start. We worked on investigations. Remember our poster back there, the investigation process. And you did number bracelets a while back, and then just this past week you did investigations on polygons.

And so what today you're going to be doing is you're going to be in an investigation as a group. So what I'm hoping is that you will be able to go through this whole process with your group. We'll be working on it today for the whole block and probably Thursday for the whole block, because you know how long investigations take.

So what I am going to be doing is I am going to give you an overview -- I am going to give you the situation and the problem. Then I am going to give you an overview of -- what I'm going to have you do during the period. And then I am going to put you to work on it. So the situation is a real life situation. It is about a kite manufacturer. And the kite manufacturer only manufactures quadrilateral kites. And actually, a regular kite that you think about is a regular kite polygon. But the kite manufacturer doesn't only make kites that are kites. You know what I mean? According to the definition of a kite, you can make any kind of quadrilateral as long as it is a convex quadrilateral. So this kite manufacturer has a problem, because every time an order comes in, the kite manufacturer has to figure out how to make the kite. And as you know -- how many of you have ever flown a kite before? So what's part of the kite kit?

-String.

String, what else?

-Sticks.

Sticks. And the sticks are what hold it together. And so the kite manufacturer -- string is not an issue, but how to do the sticks is the issue. Because if you're going to have different sticks, you are going to have a different shape of kite. And the kite manufacturer is getting really tired of every time an order comes in, having to figure out what kind of sticks to use. So you are going to be giving advice to this manufacturer. And here is the kind of advice you are going to give him or her, and that is, anytime an order comes in for -- let's say they want to have a square kite -- the manufacturer because of your work will know exactly what kind of sticks to put in the kit, and how those sticks should be put together. And so that would be very clear directions for him to put in the kit, or her, I should say, so that it'll be very quick and no time will be wasted. So it's a prototype. So a prototype for a square kite, a prototype -- what other type of quadrilaterals could it be?

-Rectangle. Rectangle.

-Trapezoid.

Okay, trapezoids. Could you speak louder so everyone can hear?

-Parallelograms.

Okay, in your groups say all the different quadrilaterals that you think it could be.

Okay, excuse me. So one of the other things I want to warn you about today is that I am going to be asking you to come in and out of your groups a lot. So we've talked about one person at a time, and so I don't know -- I don't really want to use that bell today. So what I would rather have you do is just ask you if I could interrupt your thoughts for a minute and talk to you. At that time I hope that you'll be able to stop the thought that you are on and focus, and we are going to do that back and forth quite a bit, so just be prepared for that. I know I am going to interrupt you right in the middle of a really important thought sometime, but I can't prevent that if it's something I think we really need to talk about. Does my voice sound gravelly? Yes.

So each table is going to get a bag of the kite sticks. And here's what they look like. You're going to have two sticks the same length -- the color doesn't have anything to do with it -- and one stick that's shorter. And you have one of these brad things to put them together, and they're hole punched. So I am going to show you how you are going to go out gathering information in the tinkering stage of your work. So I'm just going to put these together in some way, like this. So I've got a long one and a short one and -- let me move this over.

Okay, so you'll be doing this on paper though, so what I will have is -- oops. I'm going to try to fix it in that position, and then at the ends of the sticks or diagonals, I'm going to put a point and take it away. So now where were my sticks? Here, they were like this and that. It's going to stick out a little bit on the end, but don't worry about that. You're just going to worry about the point.

Okay, so can you visualize what kind of quadrilateral this is? Okay, is this any special kind of trapezoid? Trapezoid why did I say that? Is this any kind of special quadrilateral?

You know, actually I learned in a book when I was preparing for this lesson that when it isn't a special category, they call it a trapezium. Yeah, in England trapezium has a different meaning. But a trapezium means that -- you know I was always wondering what that would be called if it wasn't a square, it wasn't a parallelogram, it wasn't any of those things. So this one does not appear to be any of the special categories of quadrilaterals. The way I put those diagonals together, it created that kind of quadrilateral. All right? So your job is going to be to figure out -- I, meaning the manufacturer -- how will I know what particular arrangement of sticks (aka diagonals) will guarantee the quadrilateral that I need to make?

So each table is going to have these, I am going to put a bag on these tables. And I'm going to ask -- the first thing I am going to ask is for you to play around with the sticks yourselves individually for a few minutes to kind of get a sense of what's happening. Then I'm going to ask you to share in your group what you found out so far. And then I am going to put you into your groups to start working. Now

you're going to have to figure out how to do this. Every group as you know is going to need these roles

-- a facilitator, a resource manager, a team leader, recorder/reporter. What they need to do is up here. And any materials that you might need are also up here. There's compasses, protractors, rulers, patty paper and a ton of scratch paper which you're going to need. And there's also a sheet on definitions of quadrilaterals, which you may want to be using in the next couple of days. Okay.