Power Block
Sample Questions to Explore

How Many different pieces are there?

Define what is meant by a "different piece". Is size to be counted as different, or just unique shape?

Which shapes fit together to make other shapes?

Demonstrate how the two special long thin triangles fit together to make a rectangle—as shown in the instruction sheet accompanying each set of Power Blocks.

How many T-1's to make T-2? T-2's to make T-3? T-3's to make T-4? T-4's to make T-5?

Power Blocks are a "proving set". You can say the ways, but you have to back your words with proof.

How many T-1's to make T-3? T-4? T-5?

Repeat the triangle questions for the parallelograms.

If I say S-1 has an area of one, can you prove the areas of S-2, S-3, S-4, S-5?

What is the fewest number of pieces it would take to make the S-5 shape if you could not use another S-5 shape?

What is the most number of pieces you might use to make the S-5?

Can you find all the ways in-between the most (32) ways to make S-5 and the least (2) ways?

Is there a pattern to be found in the ways to get from 32 pieces used to make the S-5, to 31 pieces to make S-5, then from 31 to 30, then from 30 to 29, and so on down to 2 pieces used?

Is there a pattern to be found in the ways to get from 2 pieces used to make the S-5 to 3 pieces, then from 3 to 4, from 4 to 5, and so on, up to 32 pieces used?

How might this pattern relate to the ways you made the T-1, T-2, T-3, T-4, T-5 triangles earlier?

If I say S-1 has an area of one, what are the areas of all the other shapes?

Which proofs did you find for the areas that are direct?

Direct proofs mean the proving pieces can be laid directly on top of the area to be proven. Four S-1 squares can be laid on top of the S-3 square to prove the area of S-3 is four.

Which proofs are indirect?

Indirect proofs mean the proving pieces cannot be laid directly on the area to be proven. Equivalent pieces must be used instead.. Two S-1 squares cannot be laid on top of the S-2 square to prove its area. Instead, four T-1 triangles (which are equivalent to two S-1 squares in area) must be used to prove the area of the S-2 square is two.

If I say S-5 has an area of one, what are the areas of all the other shapes? Trace the proofs you use.

If I say (any shape the teacher chooses can be used to fill this space) has an area of one, what are the areas of all the other shapes?

Trace the proofs you use.

Make (or find) a shape that has 3 sides in silhouette. Make (or find) a shape that has 4 sides. 5 sides. 6 sides. 7 sides. And on and on.

What is meant by “side”?

Trace a shape on centimeter graph paper. What is its surface area?

Which shapes have surface areas that are the same?

(For use with pan balances) When the S-1 shape has a mass (weight) of one, what weighing combinations can be formed with the five different size squares? (S-1, S-2, S-3, S-4, S-5)

What is the weight of the heaviest object these five blocks could be used to weigh?

Are there any whole numbers between 1 and 31 that cannot be made with these five blocks?

What else can you think to ask?