Directions: NO TALKING. Turns move clockwise around the group. When it is your turn, you may ***only*** offer someone else a card you have, you may not take a card from someone else. However, you may pass your turn. There are four sets of equivalent expressions. The goal is for each person to have one set of equivalent expressions. When everyone passes their turn in the same round, you may talk and determine if you have the correct expressions grouped. Think for a minute about what strategies you are going to use, then when everyone is ready to start begin.

You may need to first ask students to explain the meaning of equivalent expressions.

Cards that go together:
A. $x^{2}x^{3},$ $x^{5}$, $\left(x\right)x^{4}$, $\frac{x^{10}}{x^{5}}$

B. $x^{2}+x^{3}$,$ x(x+x^{2})$, $\frac{\left(x^{2}+x^{3}\right)^{4}}{\left(x^{2}+x^{3}\right)^{3}}$,$ x^{2}(x+1)$

C. $2x^{5}$,$ x^{5}+x^{5}$,$ \frac{10x^{7}}{5x^{2}}$,$ x^{4}(x+x)$

D. $\left(x^{2}\right)^{3}$,$ \left(x^{3}\right)^{2}$,$ 4x^{6}-3x^{6}$, $x^{6}$

Once students are allowed to talk, have them develop rigorous justifications of how they know they have the expressions grouped into equivalent expressions.

Discussion questions:

1. Discuss what they found difficult, and help them explain how they know which expressions are equivalent. Be sure to have them explain how they distinguish between the sum of two like terms and the product of two terms in such a way that they can explain how the sum of like terms uses the distributive property so they can justify why the exponents stay the same (e.g. x2+x2=x2(1+1)=2x2), and why the product of terms or powers of terms uses the rules they do (e.g.  and .
2. Ask them to come up with one more expression that is equivalent to the expressions in the group that use a different operation than those used in the collection. (For example, find an expression equivalent to x5 that uses addition or subtraction, and an expression equivalent to the expressions in B that does not use addition.)