Math Cut Ups ✂ — Algebraic Thinking Cards

Teacher directions:

- Print the card sets for each group of students using colored cardstock.
- Laminate all materials before using for longer durability.
- Cut cards apart and place sets in baggies or envelopes, or on rings.
- Use **Algebraic Thinking Cards** to prompt student thinking and help students process the data patterns and algebraic relationships they will be working with during an activity or exercise.
- Suggested uses:
  - Select a few cards (by letters) appropriate to your learning activity and ask students to be thinking about these as they complete their work.
  - Discuss cards as a whole group or have groups or individuals discuss one or two cards.
  - Incorporate discussion questions into written conclusion paragraphs.
  - Differentiate for the specific abilities of a student or group (Special Education, ELL, GT) by removing/adding cards.
- Generate additional cards for the set (S, T, U).
- Copy the template below with all the questions and have students glue it into their math notebooks for continued use during the year.

Algebraic Thinking Process Questions

A. Is there a pattern in the data? Explain the pattern in a sentence.
B. How can you use the pattern to develop a rule to describe the pattern?
C. How can a process column help you to find a pattern?
D. How does the input value relate to the output value in the pattern?
E. Is the data uni-variate or bi-variate? How do you know?
F. What type of graph would best illustrate the data and the patterns you see? Why?
G. If the data were graphed on a coordinate plane, would it be proportional? How do you know?
H. If the pattern is not proportional, how would it need to change to make it proportional?
I. If the pattern is proportional, how could you change it to make it non-proportional?
J. If the data were graphed on a coordinate plane, what would be plotted on the x-axis and what would be plotted on the y-axis? Why?
K. Which of the variables in the situation represent the independent variable? How do you know?
L. Which of the variables in the situation represent the dependent variable? How do you know?
M. What is the relationship between the graph and the equation?
N. What is the relationship between the graph and the table?
O. What is the relationship between the equation and the table?
P. What does each of the different representations of a pattern tell or show you about the relationship?
Q. How does the graph, table, equation rule, etc. illustrate that a relationship exists?
R. What 3 points about what you have learned would a new student need to know to be successful?
S.
T.
U.

A. Is there a pattern in the data? Explain the pattern in a sentence.	**B.** How can you use the pattern to develop a rule to describe the pattern?	**C.** How can a process column help you to find a pattern?
D. How does the input value relate to the output value in the pattern?	**E.** Is the data uni-variate or bi-variate? How do you know?	**F.** What type of graph would best illustrate the data and the patterns you see? Why?
G. If the data were graphed on a coordinate plane, would it be proportional? How do you know?	**H.** If the pattern is not proportional, how would it need to change to make it proportional?	**I.** If the pattern is proportional, how could you change it to make it non-proportional?
J. If the data were graphed on a coordinate plane, what would be plotted on the x-axis and on the y-axis?	**K.** Which of the variables in the situation represents the independent variable? How do you know?	**L.** Which of the variables in the situation represents the dependent variable? How do you know?
M. What is the relationship between the graph and the equation?	**N.** What is the relationship between the graph and the table?	**O.** What is the relationship between the equation and the table?
P. What does each of the different representations of a pattern tell or show you about the relationship?	**Q.** How does the graph, table, equation rule, etc. illustrate that a relationship exists?	**R.** What 3 points about what you have learned would a new student need to know to be successful?
S.	**T.**	**U.**