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| **Investigating Functions** | | | |
| Identifies variables (dependent and independent) as changing quantities in a given situation.  Kaspar earned $20 to spend on loot bags for their party guests. They want to put a mini flashlight in each loot bag. A flashlight costs $3.  A table of numbers and symbols  Description automatically generated  “The money left *depends* on  the number of flashlights bought.  So, *M* is the dependent variable and *n* is the independent variable.” | Describes the rule that relates the values of the dependent variable to the values of the independent variable.  A table of numbers and symbols  Description automatically generated  “Multiply the number of flashlights bought by 3, then subtract from 20  to get the money left in dollars.” | Represents corresponding values of the dependent and independent variables of a function (table of values, points on the Cartesian plane).    “From the graph, I can see that  as the number of flashlights increases by 1, the money left decreases by 3.” | Represents a function as an algebraic expression.  “I used the rule to write an algebraic expression: Multiply the number  of flashlights purchased, *n*, by 3, then subtract from 20 to get the money left in dollars, *M*.  The expression is 20 − 3*n*.” |
| **Observations/Documentation** | | | |
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| **Investigating Functions (cont’d)** | | | |
| Relates between various representations of the same function.  A graph of a function  Description automatically generated  Add 1 to the term number, *n*, to get the term value, *v*.  “The graph and the rule  both represent the same function because on the graph,  each term value is one more  than the term number.” | Determines a value of the dependent variable given the independent variable.  Bikes are available for rent for $10, plus $3 per hour. How much would it cost to rent a bike for 9 hours?  “An expression that relates the total cost, *C*, to the number of hours, *n*, is 3*n* + 10.  To find the cost for 9 hours,  I evaluated the expression for *n* = 9.  3(9) + 10 = 37  It would cost $37.” | Uses strategies flexibly to determine a value of the independent variable given the value of the dependent variable.  A person paid $43. For how many hours did they rent the bike?  “I set the expression equal to 43, then used inverse operations  to solve the equation.”  3*n* + 10 = 43  3*n* + 10 – 10 = 43 – 10  3*n* = 33  =  *n* = 11 | Flexibly solves problems involving functions.  Yuri has $455 in the bank. To buy tickets, Yuri takes out $15 each week, for 20 weeks. After 20 weeks, will Yuri have enough money left to donate $175 to the Terry Fox Run?  “An expression that relates the amount left in the bank in dollars, *A*, to the number of weeks, *w*, is:  455 – 15*w*  After 20 weeks, the amount left  in the bank will be: 455 – 15(20) =  455 – 300, or 155; $155.  Yuri will not be able to donate $175 to the Terry Fox Run.” |
| **Observations/Documentation** | | | |
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