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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 his 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.”  *(« L’argent restant dépend du nombre de lampes de poche achetées.* R *est donc la variable dépendante et* n *est la variable indépendante. »)* | 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.”  *(« Je multiplie le nombre de lampes de poche achetées par 3, puis je le soustrais de 20 pour savoir l’argent restant en dollars. »)* | Represents corresponding values of the dependent and independent variables of a function (table of values, points on the Cartesian plane).  A graph with red dotted line  Description automatically generated  “From the graph, I can see that  as the number of flashlights increases by 1, the money left decreases by 3.”  *(« D’après le diagramme, je peux voir que lorsque le nombre de lampes de poche augmente de 1, l’argent restant diminue de 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*.”  *(« J’ai utilisé la règle pour écrire une expression algébrique : Multipliez le nombre de lampes de poche achetées,* n*, par 3, puis soustrayez de 20 pour obtenir l’argent restant en dollars,* R*. L’expression est 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.”  *(« Le diagramme et la règle représentent la même fonction parce que dans le diagramme, la valeur de chaque terme est 1 de plus que le numéro du terme. »)* | 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.”  *(« Une expression qui relie le coût total,* C*, au nombre d’heures,* n*, est 3*n *+ 10.*  *Pour trouver le coût pour 9 heures, j’ai évalué l’expression pour n = 9.*  *3(9) + 10 = 37*  *Cela coûterait 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.”  *(« J’ai défini l’expression comme étant égale à 43, puis j’ai utilisé les opérations inverses pour résoudre l’équation. »)*  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.” *(« L’expression qui relie le montant restant à la banque en dollars,* M*, au nombre de semaines,* s*, est la suivante : 455 – 15*s  *Après 20 semaines, le montant restant à la banque sera : 455 – 15(20) = 455 – 300, ou 155; 155 $. Yuri ne pourra pas donner 175 $ à la Journée Terry Fox. »)* |
| **Observations/Documentation** | | | |
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