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7-3 TECHNOLOGY ACTIVITIES

Technology activities in *MathLinks* enhance the meaning of the content being studied and increase student engagement. *MathLinks* technology activities typically require software and hardware that is readily available in schools.

Sometimes worksheets are provided to connect technology activities with *MathLinks* lessons. All links are checked periodically, and we apologize in advance if third-party websites are taken down or links do not work.

Name of Activity	Technology	Description	Links
Visual Patterns	Public domain website	This site offers a huge number of varied patterns that can be used to create more problems like those in Lesson 1. Use anytime.	www.visualpatterns.org
Constant of Proportionality	Desmos (note that this is an older, "non-supported" activity)	Students create lines through the origin and find points on these lines. Then they describe the meaning of the points and the constant of proportionality in the context of the problem. Use with lesson 3.1.	https://teacher.desmos.com/activitybuilder/custom/56097548686358ae072fff2d Use Worksheet: Constant of Proportionality
Turtle Time Trials	Desmos	Students connect animated videos of turtle races to other representations (tables, graphs, and equations). Some relationships are proportional and some are not. Use after lesson 3.2.	https://teacher.desmos.com/activitybuilder/custom/5da9e2174769ea65a6413c93?collections=featured-collections%2C5d939bb5a577d244fa315ebd Use Worksheet: Turtle Time Trials
The Running Game	Desmos	Students explore a potentially proportional relationship as they interpret pictures on stopwatches to predict running distances and times. Use after lesson 3.2.	https://teacher.desmos.com/activitybuilder/custom/563a5a1b3f80f2fd0b7c8074 Use Worksheet: The Running Game

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7-3 TECHNOLOGY ACTIVITIES
CONSTANT OF PROPORTIONALITY

Go to student.desmos.com, get the class password from your teacher, and do the Desmos activity called Constant of Proportionality.

1. In the table below, what appears to be the constant of proportionality? 4

x	0	3	6	10	2.5	150
y	0	12	24	40	10	600

2. Given the following ordered pairs, what appears to be the constant of proportionality? 2.5

   (0, 0) (2, 5) (10, 25) (1, 2.5)

3. In as much detail as you can, describe the graph of a line with a constant of proportionality of $\frac{1}{2}$. It is a line that must go through the origin. Of the infinite other points that it goes through, some are at (1, $\frac{1}{2}$), (2, 1), (3, $1\frac{1}{2}$), (4, 2), etc. Each *x*-value times $\frac{1}{2}$ gives the corresponding *y*-value.

4. Write the numbers that might come next in the table below, determine if there is a constant of proportionality, and explain your reasoning. There is no constant of proportionality. There is no constant value to multiply by each *x*-value to get the corresponding *y*-values.

x	1	2	3	4	5	6	7
y	1	4	9	16	25	36	49

5. Assume that at both stores in the tables below you can buy any number of Healthy Crunch bars you like at these prices: 2 for $2.50 at Barter Jacks and 4 for $4.20 at Quigley's. Fill in the tables to collect data on this product from these two stores.

   For each table, write the constant of proportionality (*k*), and describe whether this number is the same or different than the unit price (price per one bar). Entries may vary.

Healthy Crunch: Barter Jack's	
quantity	**price**
2	2.50
1	1.25
4	5.00
5	6.25
10	12.50
Value for *k*: 1.25	

Healthy Crunch: Quigley's	
quantity	**price**
4	4.20
1	1.05
2	2.10
5	5.25
10	10.50
Value for *k*: 1.05	

The unit price is equal to the constant of proportionality.

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7-3 TECHNOLOGY ACTIVITIES
TURTLE TIME TRIALS

Go to student.desmos.com, get the class password from your teacher, and do the Desmos activity called Turtle Time Trials. Below is information on different turtles.

1. If Turtle A is running faster than Turtle B in a video, what must be true when you compare…
   a. Their distance values in the table? Turtle A covers more distance in any given time.
   b. The graphs of their lines? Turtle A has a "steeper" line.
   c. The coefficient of x in their equations? (e.g., for $y = 3x + 4$, 3 is the coefficient of x.)

      Turtle A has a greater value for the coefficient of x.
2. If Turtle C has a head start on Turtle D in a video, what must be true when you compare…
   a. Their distance values in the table? The Turtle C distance value will be greater at the start.
   b. The graphs of their lines? The Turtle C graph will start higher on the vertical axis.
   c. The constant values in their equations? (e.g., for $y = 3x + 4$, 4 is the constant value.)

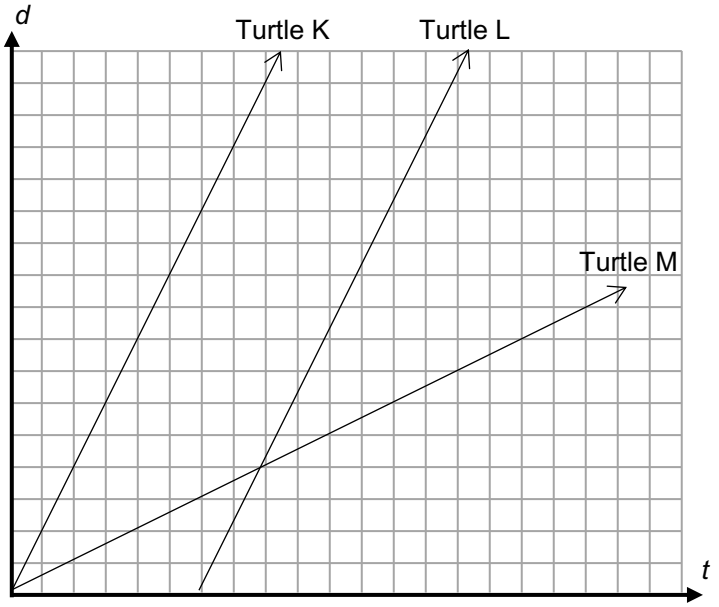
      The Turtle C constant value will be greater.
3. You watched a video, connected it to some equations, and observed which turtles went faster/slower, comparing the rates of speed to the equations.

   Study these equations where t represents time in seconds and d represents distance in feet.

Turtle E	Turtle F	Turtle G	Turtle H
$d = 2t + 4$	$d = t + 1$	$d = 3t$	$d = 2t$

   a. Which turtle(s) is/are the fastest? Slowest? Fastest is Turtle G; slowest is Turtle F.
   b. Which turtle(s) has/have the greatest head start? Turtle E.

4. Study these graphs where t represents time in seconds and d represents distance in feet.



   a. Which turtle(s) is/are the fastest? Slowest?
      Fastest are Turtles K and L (same speed); slowest is Turtle M.
   b. Which turtle(s) has/have the largest head start?
      Turtles K and M start at $t = 0$, and Turtle L starts later.

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7-3 TECHNOLOGY ACTIVITIES
THE RUNNING GAME

Go to student.desmos.com, get the class password from your teacher, and do the Desmos activity called The Running Game.

1. If Sam can run at a pace of 7 minutes 21 seconds (7:21) per mile on average, how long would it take him to run 4 miles at that pace? 29:24

2. Kim ran 3 miles in 30:04. What was her average pace per mile?
   Very close to 10:01 (10 min and $1\frac{1}{3}$ sec)

Answers below will vary. One example:

3. Amet ran 5 miles in 39 minutes. He ran each mile at a different pace, but each mile was within 1 minute of the mile before it and the mile after it.

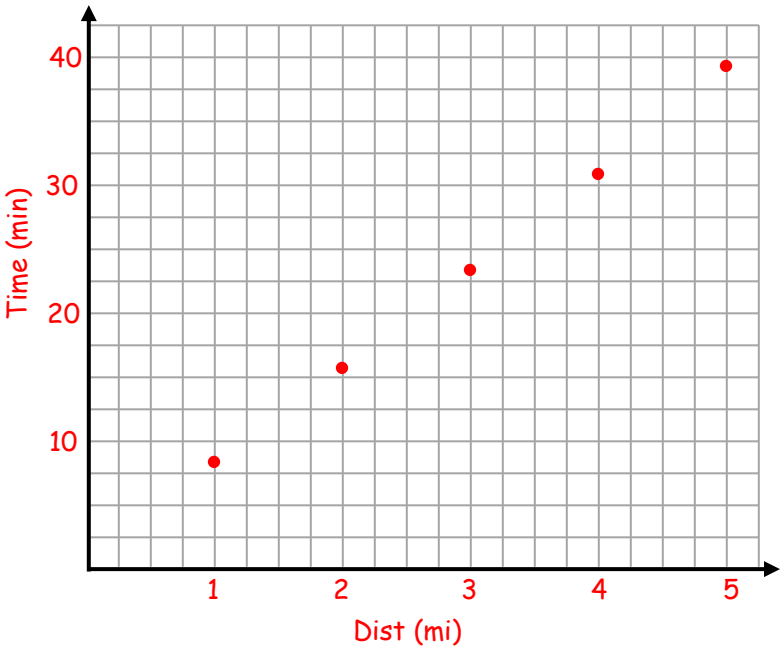
   a. Write reasonable times for each mile in the table.

Mile #	1	2	3	4	5
Time	7:55	7:45	7:47	7:52	7:41

   b. Make a new table of the data in part a above to record TOTAL time at each mile.

Distance in miles	1	2	3	4	5
Time in minutes	7:55	15:40	23:27	31:19	39

   c. Graph the data in part b above. Label and scale your graph appropriately.
   It is okay to draw a trend line.



   d. Write a reasonable ordered pair to fit this graph:
   (6, 46:48)

   Explain what this ordered pair means in the context of the problem.
   Amet ran a total of 6 miles in 46 min 48 sec.
   7:48 is 7 min 48 sec = 7.8 min

4. Find a value that approximates this equation:
   See 3d above:

   Time in minutes = 7.8 • distance in miles

   Let t = time and d = distance, and rewrite the equation above: $t = 7.8d$