01
Foundation

Proportional Graphs

B FUTURE SCHOOL

Interpret graphs of proportional relationships (including representation of unit rates as (1,r).
CCSS.MATH.CONTENT.7.RP.A.2.D | US_EN_07_MAT_C8_WS_m1

The vaccinated turtles are safe from the disease but their existence is still threatened by other factors. Let's see what these factors are.

1 The following dot plot gives the number of turtles left based on their size. Observe the dot plot and complete the provided table.

1 dot = 9 turtles

Small   Medium   Large
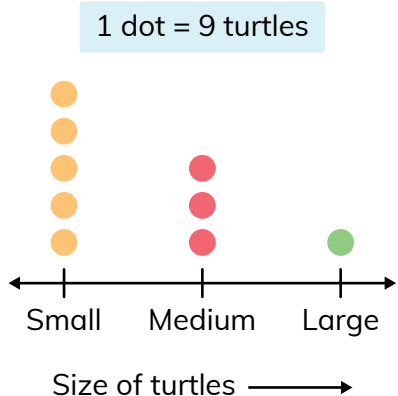
Size of turtles ⟶

Size of turtles		Number of turtles
Small		
Medium		
Large		9

2 The turtles are dependent on the forests. The provided graph shows the reduction in number of trees in the forest over a span of time (in years). Find the unit rate of reduction in the number of trees. Write your answer in the boxes given below.

(1,800)
(x_2, y_2)
(4,500)
(x_1, y_1)

Number of trees

Time (in years) ⟶
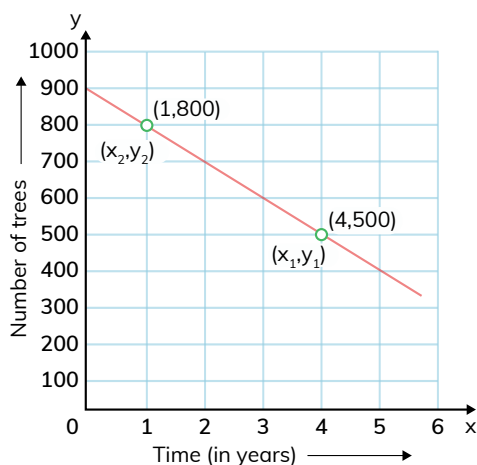
$$\text{Unit rate} = \frac{y_2 - y_1}{x_2 - x_1}$$

☐☐☐ - ☐☐☐

———————

☐ - ☐

Unit rate = - ☐☐☐ trees/year

FUTURE SCHOOL

Proportional Graphs

02
Foundation
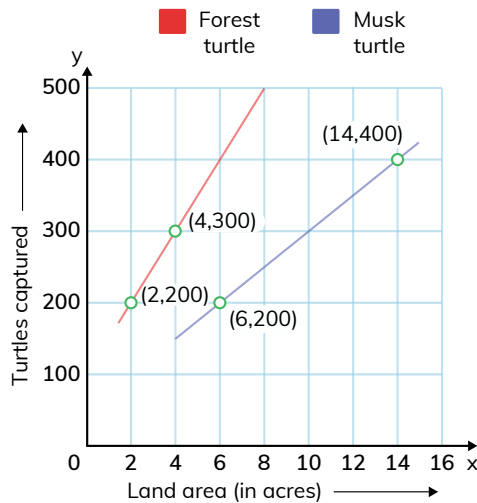
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3 The provided graph represents the number of turtles captured in a particular area (in acres). Write the unit rate for capture of forest turtles and musk turtles.

■ Forest turtle   ■ Musk turtle

Graph:
- y-axis: Turtles captured (0, 100, 200, 300, 400, 500)
- x-axis: Land area (in acres) (0, 2, 4, 6, 8, 10, 12, 14, 16)
- Points: (2,200), (4,300), (6,200), (14,400)

$$\text{Unit rate} = \frac{y_2 - y_1}{x_2 - x_1}$$

Unit rate for forest turtles = ☐ ☐   turtles/acre

Unit rate for musk turtles = ☐ ☐   turtles/acre

Check the difference in the unit rates for forest turtles and musk turtles (in turtles/acre).

◯ 20   ◯ 25   ◯ 30   ◯ 35

4 The function relating the total number of turtles (t) captured to the number of aquatic turtles (a) captured among them is given as a = 0.83t. If the total number of turtles captured are 400, circle the number of aquatic turtles.

Hint: Plug in 400 into the function and see what number you get.

249   332   373   415

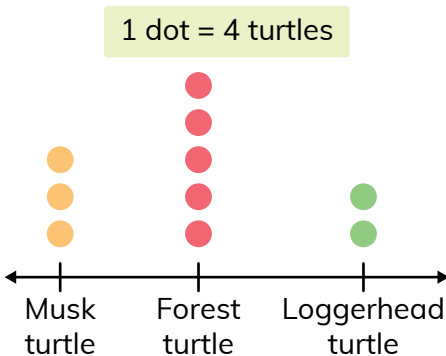**03**
Application

Proportional Graphs

B FUTURE SCHOOL

Interpret graphs of proportional relationships (including representation of unit rates as (1,r).
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You find that human activities like hunting, pollution, and deforestation are seriously impacting turtle populations. Let's analyze the data for different types of turtles affected and try to save them.

1 The dot plot shows different types of endangered turtles that are hunted by humans. If each dot represents 4 turtles, check the box for the type of turtle that is hunted the most and answer the following question.
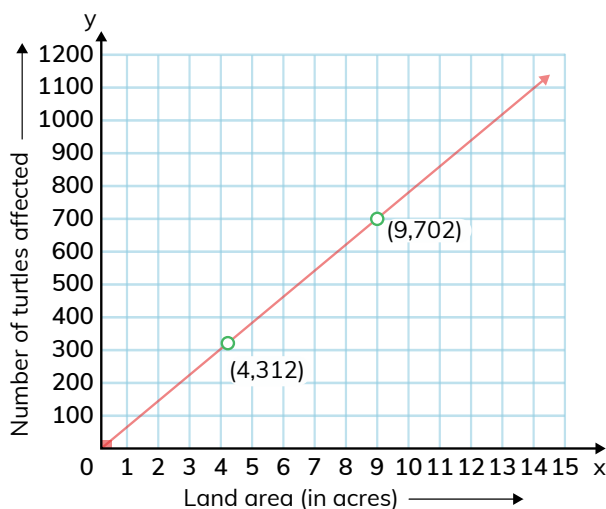
1 dot = 4 turtles

◯ Loggerhead sea turtle

◯ Forest turtle

◯ Musk turtle

Musk turtle   Forest turtle   Loggerhead turtle

Number of turtles hunted the most   =   ☐   × 4 =   ☐☐

2 The provided graph represents data showing the number of turtles being affected by land pollution. Calculate the number of turtles affected per unit land area. Write your answer in the boxes given below.

y

Number of turtles affected

1200
1100
1000
900
800
700 — (9,702)
600
500
400
300 — (4,312)
200
100

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15   x
Land area (in acres) →

Unit rate = $\dfrac{y_2 - y_1}{x_2 - x_1}$

Unit rate = ☐☐ turtles/acre

B FUTURE SCHOOL

Proportional Graphs

04
Application
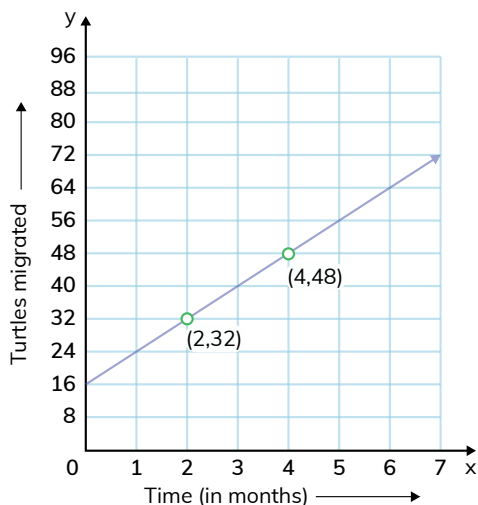
Interpret graphs of proportional relationships (including representation of unit rates as (1,r).
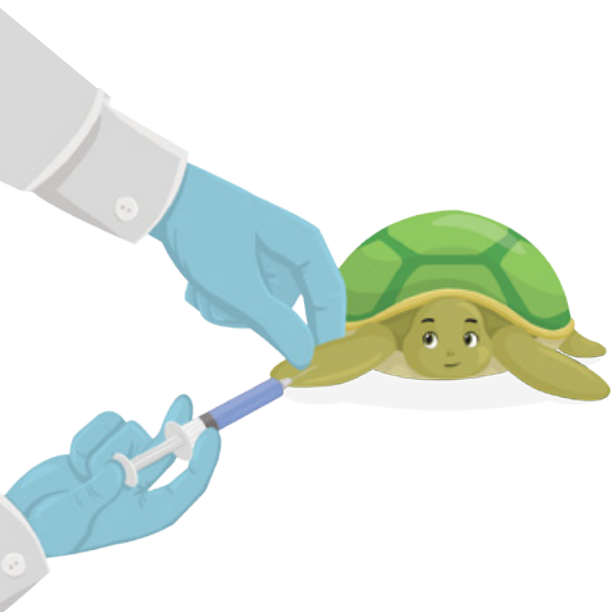CCSS.MATH.CONTENT.7.RP.A.2.D | US_EN_07_MAT_C8_WSA_m1

3

The provided graph shows the number of turtles that have migrated due to deforestation over a span of time (in months). Check the correct unit rate (in turtles migrated/month).

(4,48)

(2,32)

Turtles migrated

Time (in months)

◯ 6 turtles/month

◯ 9 turtles/month

◯ 8 turtles/month

◯ 12 turtles/month

4

Medicines are required to protect the turtles from diseases. A box of medicine contains 7 more syringes (s) than the doses of medicine (m). Use the relation to complete the following table.

Hint: Use s = m+7 to fill in the table.

Doses of medicine (m)	Number of syringes (s)
2	☐
☐	12
7	☐ ☐

05
Create

Proportional Graphs

ⓑ **FUTURE SCHOOL**

Interpret graphs of proportional relationships (including representation of unit rates as (1,r).
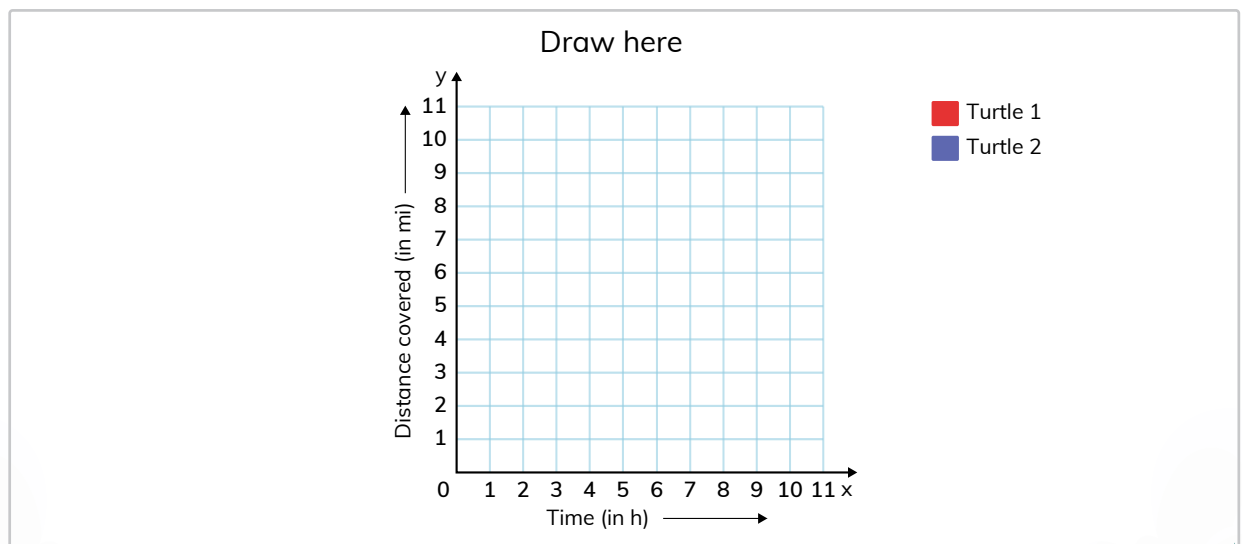CCSS.MATH.CONTENT.7.RP.A.2.D | US_EN_07_MAT_C8_WS_m1

Let's conduct physical tests to analyze and monitor the health of different types of turtles. The turtle traveling the most distance in the least amount of time will be considered the healthiest.

Fill in the table based on the following guidelines:
- **Turtle 1:** Between 2 to 8 mi.
- **Turtle 2:** Between 5 to 9 mi.
- Both the turtles start at same time and the starting time is '0'.
- The time taken can be a natural number less than 5. It will be the same number for both turtles.

Turtles	Initial distance (in mi)	Time 'T' (in h)	Distance traveled (in mi)
Turtle 1	0		
Turtle 2	0		

Using the table, plot a graph in the given space between the distance covered by the two types of turtles with respect to time (in h).

Draw here

Turtle 1
Turtle 2

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From the graph, calculate the unit rate (in mi/h) for each type of turtle and compare them.

$$\text{Speed} = \text{Unit rate} = \frac{y_2 - y_1}{x_2 - x_1} \text{ mi/h}$$

Speed of the Turtle 1 $= \dfrac{\boxed{} - \boxed{}}{\boxed{} - \boxed{}} = \dfrac{\boxed{}}{\boxed{}}$ mi/h

Speed of the Turtle 2 $= \dfrac{\boxed{} - \boxed{}}{\boxed{} - \boxed{}} = \dfrac{\boxed{}}{\boxed{}}$ mi/h

Using the data, choose the turtle that will be considered the healthiest among the two. The turtle traveling the most distance in the least amount of time will be considered the healthiest! Check the correct box.

( ) Turtle 1   ( ) Turtle 2

Great! Your efforts have helped save endangered turtles from threats.