

Find the unit rate of a proportional relationship using a table and a graph.  
CCSS.MATH.CONTENT.7.RP.A.2.B | US\_EN\_07\_MAT\_C06\_WS\_m1

Your app that alerts about the hacking attempt is ready. Let's install and test the app in the office computers.

- 1 If the app takes 15 min to get installed on an office computer, then in how many computers can the app can be installed in 1.5 h? Write your answers in the boxes given below.

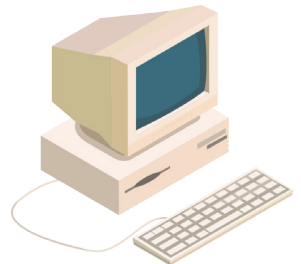
Hint: 1 h = 60 min

Total time available = 1.5 h = 1.5 ×   =   min

Number of computers in which the app can be installed in 1.5 hr

=  $\frac{\text{Total time in min}}{\text{Installation time for one computer (in min)}}$  =



- 2 The app size is 1 GB and it takes 15 sec to download 60 MB of data. Find the rate of download and the total time required to download the app completely. Write your answer in the boxes given below.

Hint: 1 GB = 1024 MB

Rate of download =  $\frac{\text{Data downloaded}}{\text{Time taken}}$  =  $\frac{\text{MB}}{\text{s}}$  =  MBps

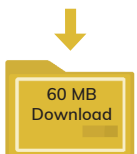
 
 


15 sec

Total time required to download the app completely =  $\frac{\text{Total data to download}}{\text{Rate of download}}$  =  $\frac{\text{GB}}{\text{MBps}}$

GB

MBps



Total time required to download the app completely =  $\frac{\text{Total data to download}}{\text{Rate of download}}$  =      sec

sec



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**3** The time taken by the app to scan the organization's data is given below. Write your answers to the following questions in the boxes given below.

Data size (in MB):	52	78
Scanning time (in s)	4	6

$$\text{Rate of scanning} = \frac{\boxed{\phantom{00}} \boxed{\phantom{00}}}{4} = \frac{78}{\boxed{\phantom{00}}} = \boxed{\phantom{00}} \boxed{\phantom{00}} \text{ MBps}$$

$$\text{Time needed to scan a data of size 390 MB} = \frac{\text{Size}}{\text{Rate}} = \frac{\boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}}}{\boxed{\phantom{00}} \boxed{\phantom{00}}} = \boxed{\phantom{00}} \boxed{\phantom{00}} \text{ s}$$

**4** The table below shows the number of computers in an office and the number of log files created by the app. Complete the equation to represent the data in the table. Write your answer in the boxes given below.

**Hint:**  $y = mx$  and  $m = \text{Slope} = \text{Rate} = \frac{\text{Number of log files}}{\text{Number of computers}}$

Number of computers(x):	3	5
Number of log files(y):	18	30

$$\text{Slope (Unit rate)} = \boxed{\phantom{00}}$$

$$\text{Therefore, required equation: } y = \boxed{\phantom{00}} x$$



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Let's test the app by installing them in other companies' computers.

1

It takes 2 engineers to do the app testing in 4 offices. How many offices are covered by each test engineer? Check the correct unit rate.

1 office/test engineer

8 offices/test engineer

2 offices/test engineer

4 offices/test engineer



Using the above unit rate, find the total number of test engineers required to complete the app testing in 50 offices. Circle the correct number of test engineers needed.

50

75

25

100

2

In Office A, installing the app on 5 computers took 55 min. In Office B, installing the app on 6 computers took an hour, and in Office C, it took 72 min to install the app on 8 computers. Match the unit rate of installation with the corresponding office.

Office

Unit rate  
(min/computer)

A ●

● 9

B ●

● 11

C ●

● 10



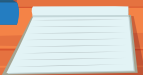
3

The table below shows the time taken and the errors occurred while testing the app in two different offices. Answers the following questions based on the table.

	Office A		Office B	
No. of days:	12	18	22	28
No. of errors:	36	54	44	56

Write the company with a unit rate of 2 errors/day in the adjacent box.

Write the company with higher error rate in the adjacent box.

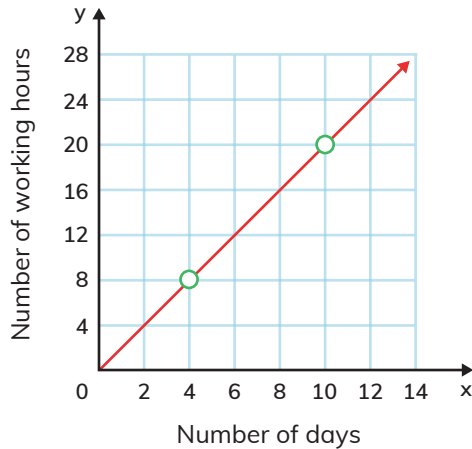


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**4**

The graph shows the relation between the number of days and the number of working hours of your test engineers across various offices. Circle the unit rate based on the graph.

**Hint:** Graph represents  $y = mx$ . So,  $m = \text{Slope} = \text{Rate} = \frac{\text{Number of working hours}}{\text{Number of days}}$



Unit rate = 3 h/day

2 h/day

If the total working hours of your test engineers is 42 hr, find the number of days they have worked. Check the correct box.

☐ 18 days

☐ 84 days

☐ 21 days

☐ 48 days

**5**

The table below shows the relation between the number of times the app is updated and the number of months. Find the unit rate and equation for the given relation. Write your answers in the boxes given below.

**Hint:**  $y = mx$  and  $m = \text{Slope} = \text{Rate} = \frac{\text{Number of updates}}{\text{Number of months}}$

Number of updates (y):	32	48
Number of months (x):	4	6

Slope (Unit rate) =

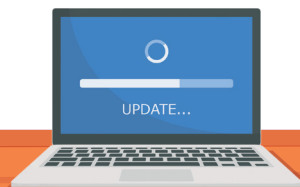
Therefore,  
required equation:

$y =$

$\times$

Number of updates  
received in 3 months

$=$



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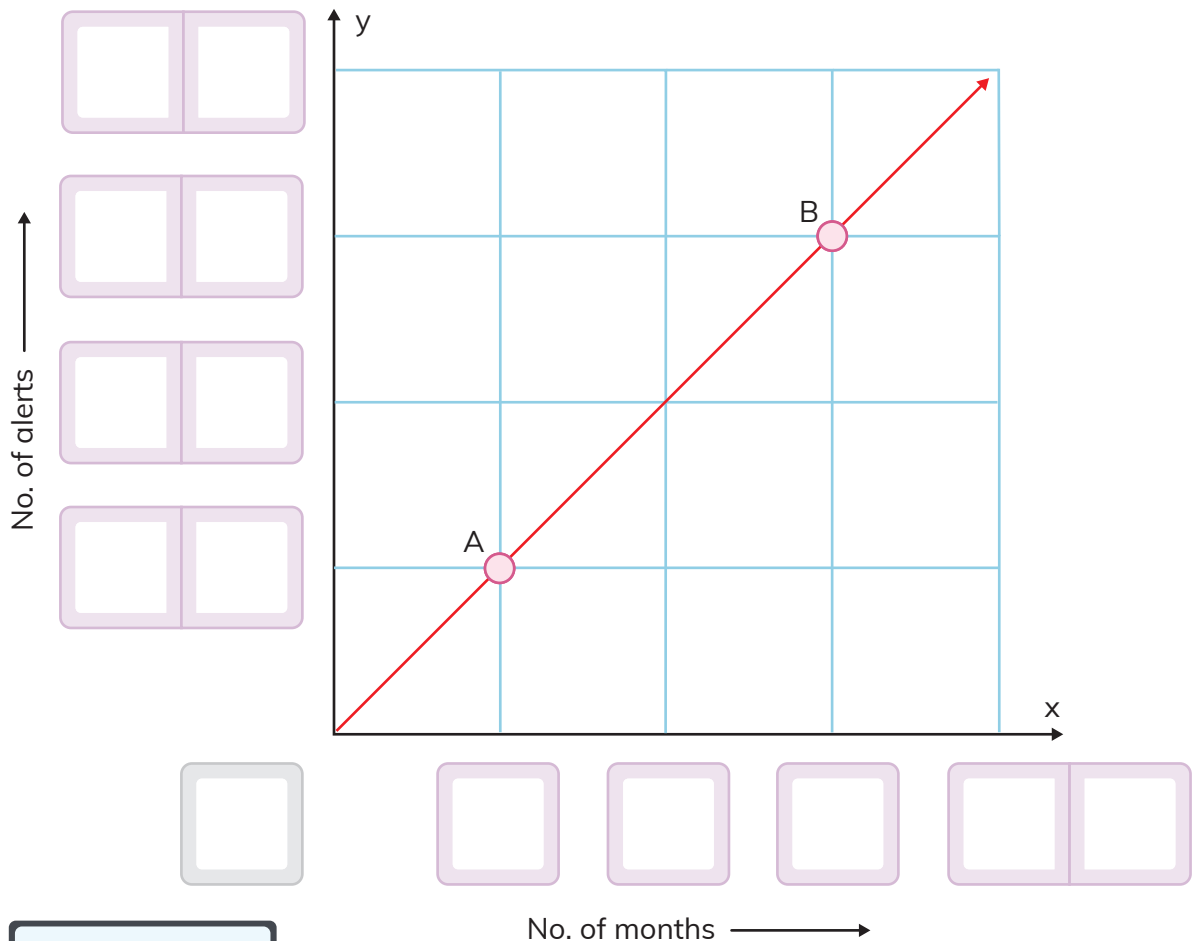
It's time to create a report based on the your app testing. Analyze the data for your app and compare it with the data of your competitor's app.

**Step 1:**

Let us create a graph that shows the relation between the number of alerts sent by your app during testing and the time taken for testing. Follow the guidelines to choose a proper scale for both axes and complete the following graph. Write your answers in the boxes given below.

**Guidelines :**

- Scale on x-axis should be multiple of 1 or 2 or 3 (Choose one value).
- Scale on y-axis should be multiple of 6 or 12 (Choose one value).
- For both the axis, you should use only the first 4 multiples of these numbers.



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**Step 2:**

Based on the graph, find the number of alerts sent per month by your app during the testing period. Use the coordinates of points A and B from the graph. Write your answers in the boxes given below.

Number of alerts sent by the app per month (slope of the graph)

$$= \frac{\text{Change in } y}{\text{Change in } x} = \frac{(\text{y of point B} - \text{y of point A})}{(\text{x of point B} - \text{x of point A})} = \frac{\boxed{\phantom{00}} \boxed{\phantom{00}} - \boxed{\phantom{00}} \boxed{\phantom{00}}}{\boxed{\phantom{00}} \boxed{\phantom{00}} - \boxed{\phantom{00}} \boxed{\phantom{00}}} = \boxed{\phantom{00}} \text{ alerts/month}$$

**Step 3:**

Check the table of your choice as as the data of your competitor's app.

<input type="radio"/>	Number of alerts (y):	12	18
	Number of months (x):	4	6

<input type="radio"/>	Number of alerts (y):	20	28
	Number of months (x):	5	7

Based on the table selected, write the number of alerts sent per month by the competitor's app (V).  $V = \boxed{\phantom{00}}$  alerts/month

**Step 4:**

Is the unit rate of your app (U) less than or equal to the unit rate of your competitor's app (V)? Circle the correct option.

Yes

No

Note: If you circled 'Yes', go back and make changes in either Step 1 or Step 3 to achieve  $U > V$ .



Congratulations! You can now report that your app is sending more alerts about the hacking attempts than your competitor's app.

