

Grade 8 Operational Mathematics Performance Task 2016

A phone company offers two monthly plans. Plan X offers customers unlimited phone calls and text messages for \$30, plus data usage for \$0.01 per megabyte (MB). Plan Y offers customers unlimited phone calls, text messages, and data usage for \$80.

1. Write an equation for plan X using c for the total cost of the plan and m for the number MB of data used.

2. Write an equation for plan Y using c for the total cost of the plan and m for the number of MB of data used.

3. How many MB of data would a customer need to use in order for plan X to cost the same as plan Y?

_____ MB

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The table shows the amount of data used for different tasks.

Task	Data Used (MB)
Upload 1 photo	0.8
Download 1 song	5.0
Stream 1 minute of video	8.0

4. Write an equation for the amount of data required, in MB, for uploading photos, downloading songs, and streaming video, where

m = total MB used,
 p = number of photos uploaded,
 s = number of songs downloaded, and
 v = minutes of video streamed.

5. On average, Sam, a customer, uploads 50 photos, downloads 16 songs, and streams 6 hours of video each month. Which plan would be cheaper for Sam? How much would the plan cost?

plan _____

\$_____

6. Sam wants to lower his bill by \$20 by streaming less video. What percent of his current video will Sam stream to accomplish this, rounded to the nearest percent?

_____%

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Scoring Guide

Question	No. of Points	Partial Credit?	Explanation
1	1	No	Student receives 1 point for writing correct equation for Plan X: $c = 30 + 0.01m$ OR $c = 0.01m + 30$
2	1	No	Student receives 1 point for writing correct equation for Plan Y: $c = 80$
3	1	No	Student receives 1 point for calculating: Student's Answer from #1 = Student's Answer from #2 and solving for m . Correct answer is $m = 5,000$
4	1	No	Student receives 1 point for writing correct equation (or equivalent equation): $m = 0.8p + 5s + 8v$
5	2	Yes	Student receives 2 points for choosing Plan X as the cheaper plan and calculating the correct monthly cost of \$60. Student receives 1 point for choosing correct Plan or calculating correct monthly cost but not both.
6	1	No	Student receives 1 point for calculating correct percent of current video stream of 31%. $60 - 20 = 40$ $30 + 0.01m = 40$ $m = 1000$ $0.8(50) + 5(16) + 8v = 1000$ $v = 110$ minutes $110/360 = 0.306 = 31\%$