Linear Story Problems Worksheet

1) Al, Bo, and Ed are all reading a book. Who is reading the fastest? Who is reading the slowest? In each situation, "x" represents the number of hours they have been reading today and "y" is the page number of the book they are on.

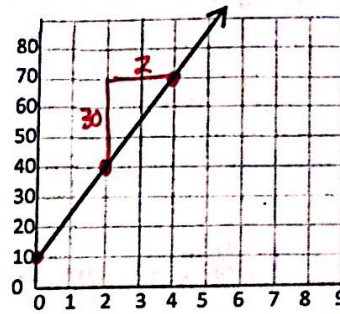**Al's Reading**

$y = 20x + 70$

20 pages per hour

Bo's Reading

x	y
0	100
3	136
6	172
9	208
12	244
15	280

+3 +36
+3 +36
+3 +36
+3 +36
+3 +36

36 pages every 3 hours

↓

12 pages per hour

Ed's Reading

30 pages every 2 hours

↓

15 pages per hour

Al = fastest
Bo = Slowest

2) a) Paul started the day with an irrigation pipe 120 feet long. He used the equation L = 15s + 120 to determine the total length of the pipe as new sections (s), were added to the end of it. What is the SLOPE and what does it represent?

15; it represents the number of feet for each section of pipe

b) Farmer Al had a well on his property that was 200 feet deep. When the well went dry, he hired a company to drill the well deeper. He used the equation d = -75t – 200 to find the depth of the well, d, based on the number of days (t) the company drilled. What is the SLOPE and what does it represent?

-75; it represents how many feet they drilled per day

c) Laura lights a candle in her kitchen. The height of the candle in inches (y) is represented by the equation y = -½x + 6, where x is the time in hours the candle has been burning. What do the –½ and the 6 represent in terms of this situation?

$-\frac{1}{2}$: each hour, the height decreases by half an inch

6: The candle was originally 6 inches tall.

3) Doug and Rocko both had low batteries on their smartphones, and started charging them at 2:00. Even though Doug's phone started with less charge, he bet Rocko that his phone would finish charging faster. At 2:06, Doug's iPhone was at 17%. At 2:14, Doug's iPhone was at 33%. Meanwhile, Rocko's phone charged 1.5% every minute, and at 2:10, his phone was at 34%.

a. How much charge did each of their phones have at 2:00 when they plugged them in?

Doug

2:06 17% → 16% in 8 minutes   Subtract 12% for 6 minutes
2:14 33%   ↓
                    2% per minute   Doug's: originally 5%

Rocko

2:10 34%

1.5% per minute → 15% for
34−15=19   10 minutes

Rocko's: originally 19%

b. When will each of their phones finish charging? Will Doug win his bet?

Doug's: needs 95%; 2% per minute

$$2)\overline{95} \quad 47\tfrac{1}{2}$$
8
15
14
1

Rocko's: needs 81%; 1.5% per minute

$$1.5)\overline{81.0} \quad 54$$
7.5
6.0

Doug's will finish at 2:47 (+30 seconds).
Rocko's will finish at 2:54. Doug will win his bet.

4) Diane wrote the ordered pairs (4, 1), (6, 7), and (10, 19). These ordered pairs satisfy a linear function. Which ordered pair satisfies the **same** linear function? Use TWO of the following methods to solve this: table, equation, graph, slope formula.

A. (8, 11)
B. (13, 28)   **B**
C. (11, 27)
D. (16, 32)

Table

x	y
4	1
6	7
8	13
10	19
12	25
14	31
16	37

← 13 | 28

Equation

Slope is $\frac{7-1}{6-4} = \frac{6}{2} = 3$

$y = 3x - 11$

$3 \cdot 13 - 11 = 28$ ✓

Slope Formula

$\frac{7-1}{6-4} = \frac{6}{2} = 3$

A: $\frac{11-1}{8-4} = \frac{10}{4}$ ✗

B: $\frac{28-1}{13-4} = \frac{27}{9} = 3$ ✓

C: $\frac{27-1}{11-4} = \frac{26}{7}$ ✗

D: $\frac{32-1}{16-4} = \frac{31}{12}$ ✗

Graph