

INDEPENDENT VARIABLE IDV WORKSHEETS



SYSTEMS OF EQUATIONS WORD PROBLEMS

A FLAT PRICE | A FEE OR NO FEE | TWO FEES | SPECIAL CASES

ANIMATED
POWERPOINT:
DOES THE WORK
FOR YOU!

FULL ANSWER
KEYS
INCLUDED

15 EXAMPLE
PROBLEMS
3 PRACTICE
SHEETS

LEVELED
PRACTICE +
FIND THE
MISTAKE

MORE PRACTICE. LESS PREP. BETTER OUTCOMES.

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Inside the Animated Lesson

INDEPENDENT VARIABLE

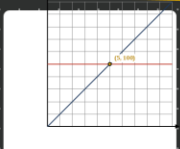
GRADE 8 • SYSTEMS OF EQUATIONS

SYSTEMS OF EQUATIONS WORD PROBLEMS

WRITE | TABLE | GRAPH | SET EQUAL | ANSWER

Animated PowerPoint lesson
15 animated word problems, slides match the page
Practice A, B • Find the Mistake

MORE PRACTICE, LESS PREP, BETTER OUTCOMES.
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LESSON OVERVIEW
Today's Goals

I CAN...

- Write an equation for each plan from a story.
- Graph both and set them equal to find the crossing.
- Answer the question in words: equal, or the better deal.

KEY VOCABULARY

Rate each, per, the slope	Start / fee the y-intercept
Flat price never changes, slope 0	System of equations two equations together
Solution where the lines cross	Better deal costs less, the lower line

STANDARDS
CCSS 8.EE.C.8a CCSS 8.EE.C.8b CCSS 8.EE.C.8c

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PART 1 • NOTES
A Flat Price

NOTES • GUIDED PROBLEMS: A FLAT PRICE

The **rate** (each, per) is the slope. The **start** (fee) is the y-intercept.

A flat price has slope **0**: $y = 100$.

Where the lines **cross**, both cost the same.

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PART 1 • GUIDED PROBLEM 1 • GUIDED PROBLEMS: A FLAT PRICE

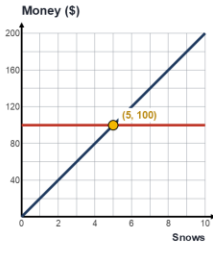
1. Shoveling Snow. Clark charges \$20 to shovel a driveway each time it snows. Brian charges a flat fee of \$100 for the season and shovels every time it snows.
How many times would it have to snow for Clark to make more money than Brian?

(1) Clark slope **20** y-int **0**
 $y = 20x$

(2) Brian slope **0** y-int **100**
 $y = 100$

Solve: set the equations equal.
 $20x = 100$
 $+20 \quad +20$
 $x = 5$
 $y = 20(5) = 100 \rightarrow (5, 100)$

Answer: More than 5 snows: 6 or more.



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PART 2 • GUIDED PROBLEM 3 • GUIDED PROBLEMS: A FEE OR NO FEE

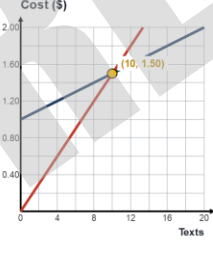
3. Text Plans. Text plans are back in style! Carson pays \$1 a month plus 5 cents (\$0.05) per text. Izzy pays 15 cents (\$0.15) per text.
After 1 month they paid the same amount. How many texts did they each send?

(1) Carson slope **0.05** y-int **1**
 $y = 1 + 0.05x$

(2) Izzy slope **0.15** y-int **0**
 $y = 0.15x$

Solve: set the equations equal.
 $1 + 0.05x = 0.15x$
 $-0.05x \quad -0.05x$
 $1 = 0.10x$
 $+0.10 \quad +0.10$
 $10 = x$
 $y = 1 + 0.05(10) = 1.50 \rightarrow (10, 1.50)$

Answer: 10 texts each. They both paid \$1.50.



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PART 3 • NOTES
Two Fees

NOTES • GUIDED PROBLEMS: TWO FEES

Better deal? Look **past** the crossing. The **lower** line costs less.

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PART 3 • GUIDED PROBLEM 8 • GUIDED PROBLEMS: TWO FEES

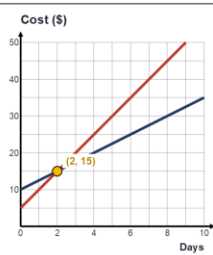
8. Renting a TV. Mrs. Stef needs to rent a big-screen TV for a party. Rent to Own charges \$10 plus \$2.50 a day. TV Rentals charges \$5 plus \$5 a day.
How many days would you need to rent from Rent to Own for it to be cheaper?

(1) Rent to Own slope **2.50** y-int **10**
 $y = 10 + 2.50x$

(2) TV Rentals slope **5** y-int **5**
 $y = 5 + 5x$

Solve: set the equations equal.
 $10 + 2.50x = 5 + 5x$
 $-2.50x \quad -2.50x$
 $10 = 5 + 2.50x$
 $-5 \quad -5$
 $5 = 2.50x$
 $+2.50 \quad +2.50$
 $2 = x$
 $y = 10 + 2.50(2) = 15 \rightarrow (2, 15)$

Answer: More than 2 days: 3 or more.



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PUT IT TOGETHER • GUIDED PROBLEM 12 • PUT IT TOGETHER

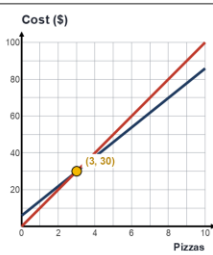
12. Pizza Night. Slice Spot charges \$8 per pizza plus a \$6 delivery fee. Pie Place charges \$10 per pizza and delivers free.
How many pizzas would cost the same at both places?

(1) Slice Spot slope **8** y-int **6**
 $y = 6 + 8x$

(2) Pie Place slope **10** y-int **0**
 $y = 10x$

Solve: set the equations equal.
 $6 + 8x = 10x$
 $-8x \quad -8x$
 $6 = 2x$
 $\div 2 \quad \div 2$
 $3 = x$
 $y = 6 + 8(3) = 30 \rightarrow (3, 30)$

Answer: 3 pizzas. Both cost \$30.



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Directions: Fill in the notes. Read each story and fill in each part as it is shown.

NOTES

The _____ (each, per) is the slope. The _____ (fee) is the y-intercept.

A flat price has slope _____: $y = 100$.

Where the lines _____, both cost the same.

1. **Shoveling Snow.** Clark charges \$20 to shovel a driveway each time it snows. Brian charges a flat fee of \$100 for the season and shovels every time it snows.

How many times would it have to snow for Clark to make more money than Brian?

(1) **Clark** slope _____ y-int _____

$y =$ _____

(2) **Brian** slope _____ y-int _____

$y =$ _____

(1)

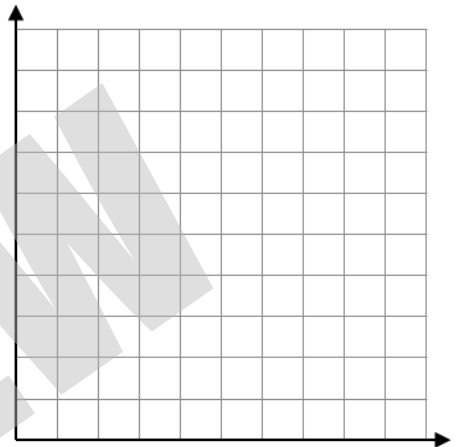
x	y
0	
1	
2	

(2)

x	y
0	
1	
2	

Solve: set the equations equal.

Money (\$)



Label the scale.

Snows

Answer: _____

2. **Car Washes.** The Suds Buds broke up! Each one started a car wash. Greyson's Wash charges \$6 for a car wash. Cade's Wash charges \$1.50 per minute.

How many minutes would the wash have to take for Greyson's to be the better deal?

(1) **Greyson** slope _____ y-int _____

$y =$ _____

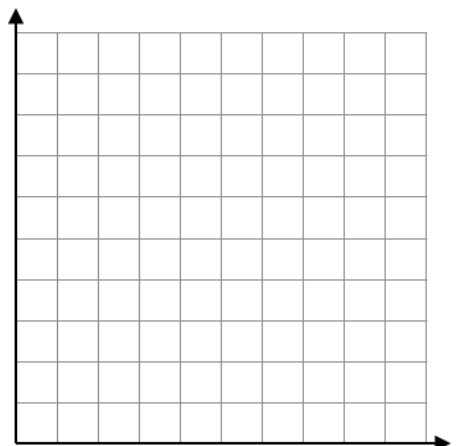
(2) **Cade** slope _____ y-int _____

$y =$ _____

(1)	<table><tr><th>x</th><th>y</th></tr><tr><td>0</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr></table>	x	y	0		1		2		(2)	<table><tr><th>x</th><th>y</th></tr><tr><td>0</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr></table>	x	y	0		1		2	
x	y																		
0																			
1																			
2																			
x	y																		
0																			
1																			
2																			

Solve: set the equations equal.

Cost (\$)



Label the scale.

Minutes

Answer: _____

Directions: Fill in the notes. Read each story and fill in each part as it is shown.

NOTES

Better deal? Look _____ the crossing. The _____ line costs less.

- 7. Lowrider Rides.** Mr. Rockett gives rides in his lowrider on the weekend. Rockett charges a \$3 pickup fee plus \$0.50 per mile. QuickRide charges a \$4 pickup fee plus \$0.25 per mile.

At what point are the two costs equal? What does it mean?

(1) Rockett slope _____ y-int _____

y = _____

(2) QuickRide slope _____ y-int _____

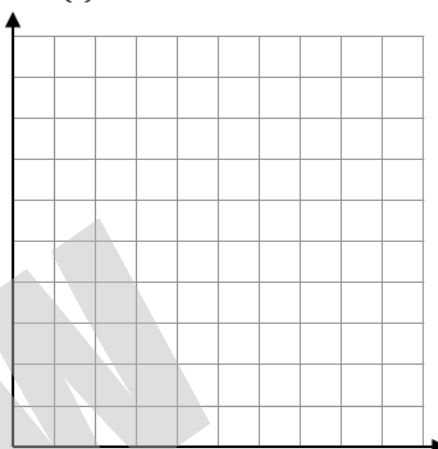
y = _____

(1)	<table><tr><th>x</th><th>y</th></tr><tr><td>0</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr></table>	x	y	0		1		2		(2)	<table><tr><th>x</th><th>y</th></tr><tr><td>0</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr></table>	x	y	0		1		2	
x	y																		
0																			
1																			
2																			
x	y																		
0																			
1																			
2																			

Answer: _____

Solve: set the equations equal.

Cost (\$)



Label the scale.

Miles

- 8. Renting a TV.** Mrs. Stef needs to rent a big-screen TV for a party. Rent to Own charges \$10 plus \$2.50 a day. TV Rentals charges \$5 plus \$5 a day.

How many days would you need to rent from Rent to Own for it to be cheaper?

(1) Rent to Own slope _____ y-int _____

y = _____

(2) TV Rentals slope _____ y-int _____

y = _____

(1)

x	y
0	
1	
2	

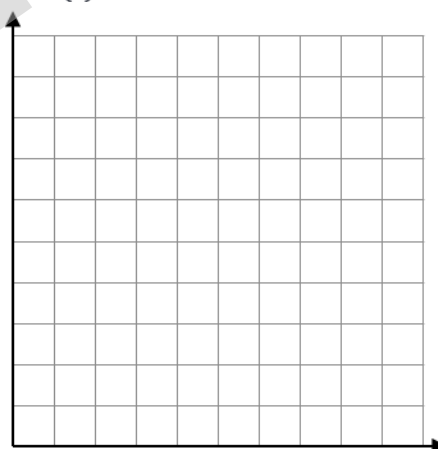
(2)

x	y
0	
1	
2	

Answer: _____

Solve: set the equations equal.

Cost (\$)



Label the scale.

Days

- 9. Cable TV.** CableMax charges \$40 a month plus \$2 for each premium channel. SkyDish charges \$25 a month plus \$5 for each premium channel.

How many premium channels would make SkyDish more expensive than CableMax?

(1) CableMax slope _____ y-int _____

y = _____

(2) SkyDish slope _____ y-int _____

y = _____

(1)

x	y
0	
1	
2	

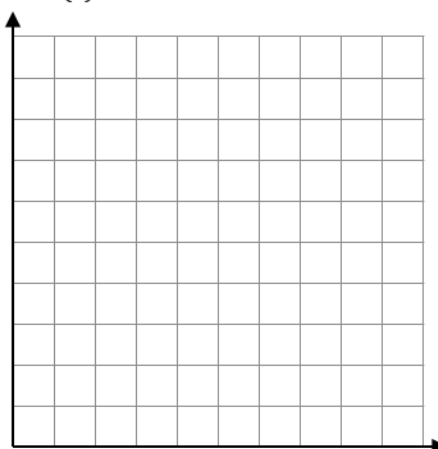
(2)

x	y
0	
1	
2	

Answer: _____

Solve: set the equations equal.

Cost (\$)



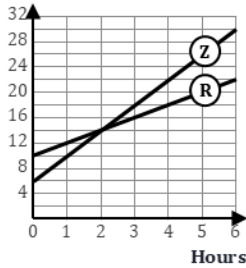
Label the scale.

Channels

Directions: Read each story and its graph. Write both equations. Answer the question.

1. Ray (R) and Zoe (Z) hike at steady speeds, one with a head start.

Distance (mi)

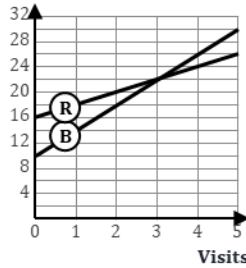


Write both equations.

When will Zoe and Ray have hiked the same distance?

2. Rock Spot (R) and Boulder (B) charge for gear plus each visit.

Cost (\$)

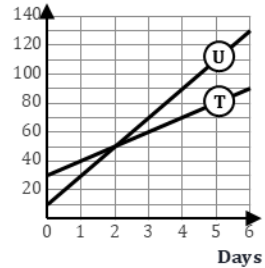


Write both equations.

When is Rock Spot the better deal?

3. Truck Town (T) and U-Move (U) rent trucks for a fee plus each day.

Cost (\$)

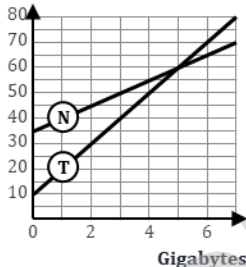


Write both equations.

Until what point is U-Move the better deal?

4. Plans TalkMore (T) and Nova (N) charge a fee plus each gigabyte.

Cost (\$)

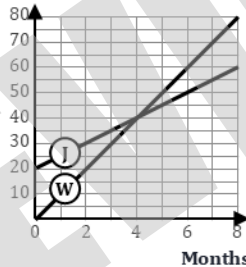


Write both equations.

When will TalkMore and Nova cost the same?

5. Jay (J) and Wren (W) each add a set number of cards a month.

Cards

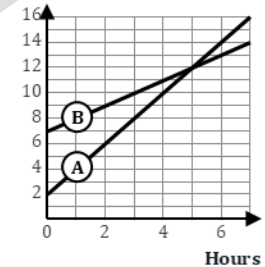


Write both equations.

When will Wren have more cards than Jay?

6. Snow is piling up at steady rates in Aspen (A) and Bend (B).

Snow (in.)

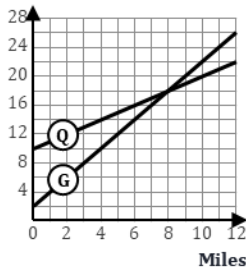


Write both equations.

Until what point will Bend have more snow than Aspen?

7. Go Cab (G) and Quick Taxi (Q) charge a fee plus a price per mile.

Fare (\$)

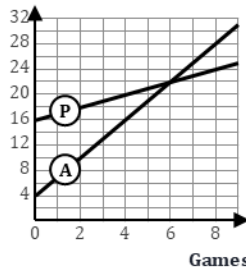


Write both equations.

When will Go Cab and Quick Taxi cost the same?

8. Pin Palace (P) and Alley Cat (A) charge for shoes plus each game.

Cost (\$)

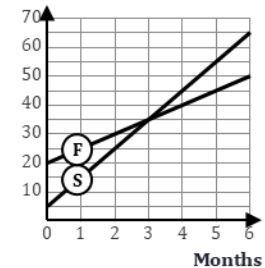


Write both equations.

When is Pin Palace the better deal?

9. Flixly (F) and StreamMax (S) charge a fee plus a monthly price.

Cost (\$)



Write both equations.

Until what point is StreamMax the better deal?

Directions: Write both equations. Set them equal and solve. Answer the question.

1. City Cab charges \$12 plus \$14 per mile. Red Cab charges \$17 per mile with no fee. <i>Until what point is Red Cab the better deal?</i> y = _____ y = _____ Answer: _____	2. Rock Spot charges \$40 plus \$12 per visit. Boulder charges \$5 plus \$17 per visit. <i>After how many visits do they cost the same?</i> y = _____ y = _____ Answer: _____	3. StreamMax charges \$4 plus \$14 per month. Flixy charges \$16 per month with no fee. <i>Until what point is Flixy the better deal?</i> y = _____ y = _____ Answer: _____
4. Metro charges \$18 plus \$6 per day. Easy Rent charges \$8 per day with no fee. <i>After how many days do they cost the same?</i> y = _____ y = _____ Answer: _____	5. Top Paint charges \$20 plus \$10 per room. Fresh Coat charges \$14 per room with no fee. <i>When does Fresh Coat cost more?</i> y = _____ y = _____ Answer: _____	6. Drip Stop charges \$20 per hour with no fee. Pipe Pros charges a flat \$160. <i>When does Drip Stop cost more?</i> y = _____ y = _____ Answer: _____
7. Nova charges \$30 plus \$8 per gigabyte. TalkMore charges \$13 per gigabyte with no fee. <i>When is Nova the better deal?</i> y = _____ y = _____ Answer: _____	8. Mr. Ono charges \$8 plus \$12 per hour. Ms. Ruiz charges \$14 per hour with no fee. <i>When is Mr. Ono the better deal?</i> y = _____ y = _____ Answer: _____	9. Haul Co charges \$30 plus \$6 per day. Big Box charges \$11 per day with no fee. <i>After how many days do they cost the same?</i> y = _____ y = _____ Answer: _____