

Lesson 6

Multistep Word Problems

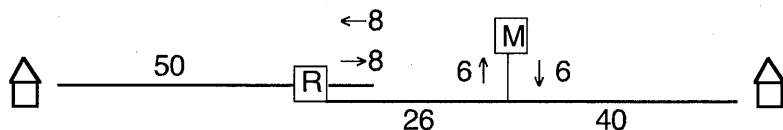
Control

$$1) \quad \$3.45 + \$1.99 + \$6.59 + \$12.98 = \$25.01$$

$$\$25.01 - \$2.50 = \$22.51$$

$$\$50.00 - \$22.51 = \underline{\$27.49} \text{ is money left}$$

- 2) Use a drawing to show their travels.
The distances don't have to be to scale.



$$50 + 26 + 40 = \underline{116} \text{ miles from house to house}$$

$$50 + 8 + 8 = 66 \text{ miles past restaurant and back}$$

$$66 + 26 = 92 \text{ miles to museum turnoff}$$

$$92 + 6 + 6 = 104 \text{ miles back to main route}$$

$$104 + 40 = \underline{144} \text{ miles total driven}$$

$$3) \quad 3.5 - .6 = 2.9''$$

$$2.9 + 8.3 = 11.2''$$

$$11.2 - 4.2 = \underline{7''} \text{ remaining}$$

Lesson 12

$$1) \quad 8 \times \$8.40 = \$67.20 \quad (\text{All money is rounded to hundredths at each step.})$$

$$7 \times \$5.99 = \$41.93$$

$$\$67.20 + \$41.93 = \$109.13 \text{ discountable}$$

$$\$109.13 \times .10 = \$10.91 \text{ (rounded)}$$

$$\$109.13 - \$10.91 = \$98.22 \text{ for discounted yarn}$$

$$2 \times \$2.50 = \$5.00 \text{ for un-discounted}$$

$$\$98.22 + \$5.00 = \$103.22 \text{ cost of yarn}$$

$$\$103.22 \times 1.13 = \underline{\$116.64} \text{ with tax and shipping}$$

$$(5\% + 8\% = 13\%)$$

$$2) \quad \$5.99 \times 5 = \$29.95$$

$$.10 \times \$29.95 = 2.995 \text{ rounds to } \$3.00$$

$$\$29.95 - \$3.00 = \$26.95 \text{ discounted price}$$

$$\$26.95 \times 1.13 = \underline{\$30.45} \text{ with tax and shipping}$$

You could also figure the total cost of one skein and multiply by 5. Rounding may give a slightly different answer.

$$3) \quad \$2.50 \times 1.13 = 2.83 \text{ for one skein (rounded)}$$

$$\$2.83 \times 1.5 = \underline{\$4.25} \text{ (rounded)}$$

You could have found the basic cost of 1.5 skeins first, and then figured tax and shipping. Your answer may be slightly different because of rounding.

Lesson 6

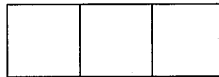
- 1) area of garden is $25 \times 15 = 375$ sq. ft.
 $\frac{1}{3} \times 375 = 125$ sq. ft. for corn
 $\frac{1}{5} \times 375 = 75$ sq. ft. for peas
 $125 + 75 = 200$ sq. ft. used
 $375 - 200 = 175$ sq. ft. left over
- 2) $\frac{1}{2} \times 32 = 16$ Sarah signed
 $\frac{3}{8} \times 32 = 12$ Richard signed
 $16 + 12 = 28$ are signed
 $32 - 28 = 4$ cards left to be signed
- 3) $\$15 + \$9 + \$12 = \36 needed
 $\frac{1}{4} \times \$36 = \9 on hand
 $\$36 - \$9 = \$27$ to earn

Lesson 12

- 1) $\frac{1}{5} \times \$30 = \6 for sandwich
 $\frac{1}{6} \times \$30 = \5 for museum
 $\frac{1}{2} \times \$30 = \15 for book
 $\$6 + \$5 + \$15 = \26 spent
 $\$30 - \$26 = \$4$ left over
- 2) $\frac{1}{2} \times 128 = 64$ miles Mark drove
 $\frac{1}{4} \times 128 = 32$ miles Justin drove
 $64 + 32 = 96$ miles driven
 $128 - 96 = 32$ miles left
 $32 \div 2 = 16$ miles driven by Kaitlyn
- 3) $\frac{1}{2} + \frac{3}{4} = \frac{2}{4} + \frac{3}{4} = \frac{5}{4}$ pie
 $\frac{5}{4} \div \frac{1}{8} = \frac{40}{32} \div \frac{4}{32} =$
 $40 \div 4 = 10$ pieces of pie

Lesson 18

- 1) $63 + 21 + 63 + 21 = 168$ yds. for outside of field.
 $21 + 21 = 42$ yds. for dividing sections
 $168 + 42 = 210$ yds. of fencing
 $210 \times 3 = 630$ ft. of fencing
- 2) $\frac{1}{2} \times 1824 = 912$ with team colors
 $\frac{2}{3} \times 912 = 608$ with hats and colors
 $\frac{1}{4} \times 608 = 152$ with hats, colors, and banners
 $152 + 100 + 25 = 277$ with banners
- 3) $36'' \div 3 = 3$ ft.
 $2 \times 3 = 6$ ft. to brim, so cube is 6 ft. on a side
 $6 \times 6 \times 6 = 216$ cu. ft. volume
 $216 \times 56 = 12,096$ pounds of water



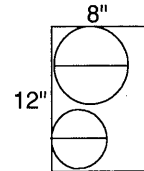
Lesson 24

- 1) $2 \frac{1}{2} + 1 \frac{1}{8} + 1 \frac{1}{4} = 4 \frac{7}{8}$ pounds of salad
 $4 \frac{7}{8} - 1 \frac{1}{2} = 3 \frac{3}{8}$ pounds left
 $3 \frac{3}{8} \div 3 = \frac{27}{8} \div \frac{3}{1} = \frac{27}{8} \times \frac{1}{3} =$
 $\frac{9}{8} = 1 \frac{1}{8}$ lb. in a container
- 2) $1 \times 1 \times 2 = 2$ cu. ft. in aquarium
 $3 \times \frac{1}{4} = \frac{3}{4}$ cu. ft. for one kind of fish
 $2 \times \frac{1}{3} = \frac{2}{3}$ cu. ft. for other kind of fish
 $\frac{3}{4} + \frac{2}{3} = 1 \frac{5}{12}$ cu. ft. for both kinds
 $2 - 1 \frac{5}{12} = \frac{7}{12}$ cu. ft.
 $\frac{2}{3} = \frac{8}{12}$, so there is not room for extra fish
- 3) $5 \frac{1}{2} \div 1 \frac{1}{2} = \frac{11}{2} \times \frac{2}{3} = \frac{22}{6} =$
 $3 \frac{4}{6} = 3 \frac{2}{3}$ pieces
 $1 \frac{1}{2}$ yds. \times 36 in. = 54 in. length of one piece
 $\frac{2}{3} \times 54 = 36$ in. length of left over piece

Lesson 24

- 1) $8 \times 12 = 96$ sq. in. area of paper
 $3.14(3)^2 = 28.26$ sq. in. area of one circle
 $3.14(2.5)^2 = 19.625$ or 19.63 sq. in. rounded
 area of other circle
 $28.26 + 19.63 = 47.89$ sq. in. used for circles
 $96 - 47.89 = \underline{48.11}$ sq. in. left over

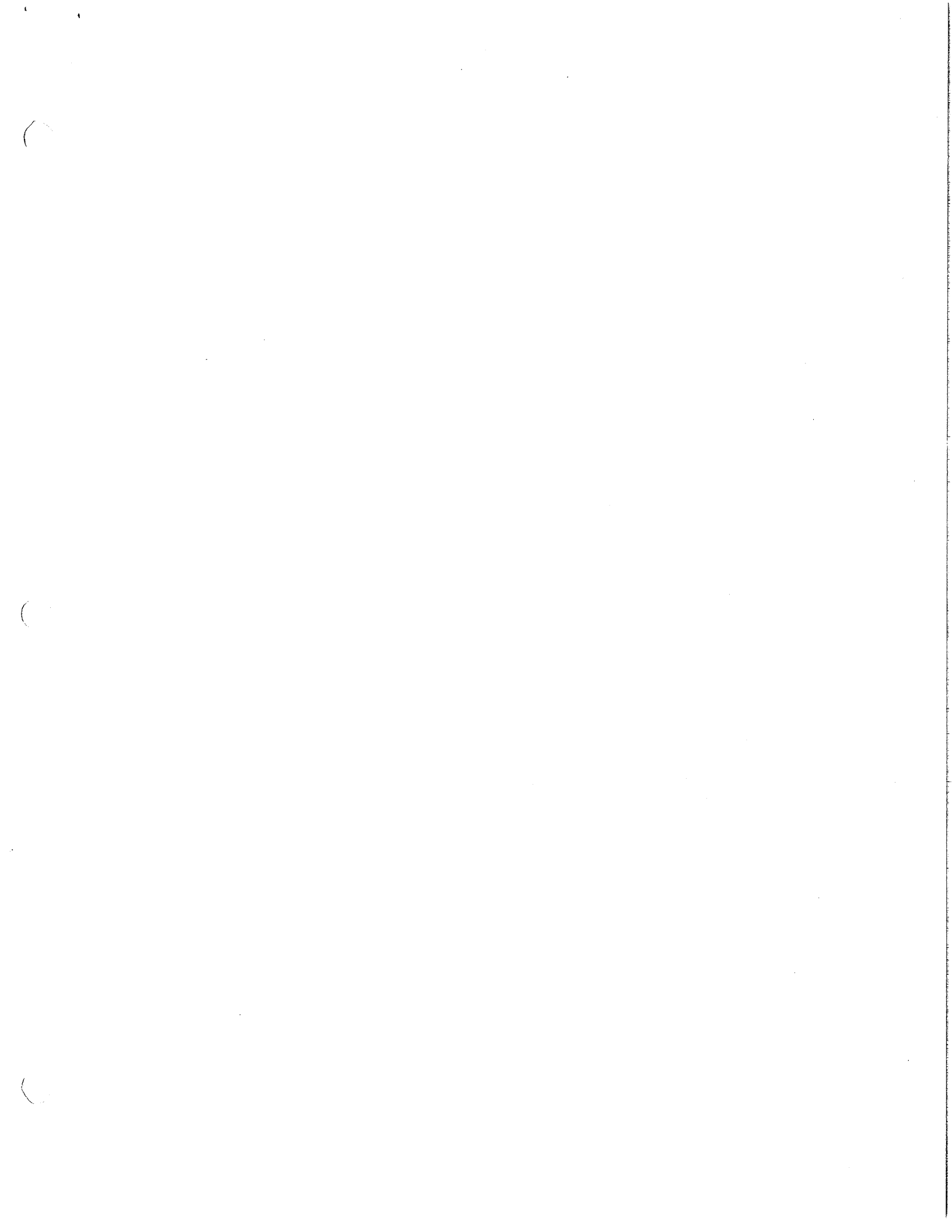
Look at the drawing to see why it is not possible to cut another circle with a 3" radius, even though there seems to be enough area. One circle has a diameter of 6", which leaves 2" distance to the edge of the paper. The other circle has a diameter of 5", which leaves a 3" distance to the edge of the paper. Neither space is enough for another circle with a 3" radius (6" diameter).



- 2) $\$6.50 \times .10 = \$.65$ is 10% of his hourly income
 $\$6.50 - .65 = \5.85 hourly amount available to spend
 $\$25.35 + \$50.69 + \$85.96 = \162 total needed
 $\$162 \div \$5.85 = 27.69\dots$ rounds to 28 hours

- 3) $.3 \times T = 300$ blue toys
 $T = 300 \div .3$
 $T = 1000$ toys in all
 $1/4 \times 1000 = \underline{250}$ green toys
 $300 + 250 = 550$ blue or green toys
 $1000 - 550 = 450$ remaining toys
 $1/2 \times 450 = \underline{225}$ red toys
 $1/2 \times 450 = \underline{225}$ yellow toys

You could use decimals or fractions for this problem.



Lesson 6

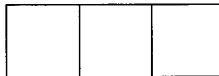
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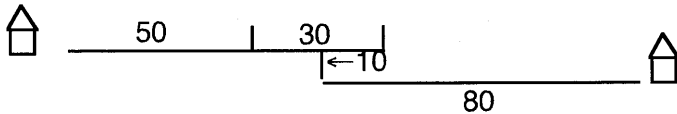


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Lesson 15

- 1) area of garden is $11 \times 13 = 143$ sq. ft.
 $10 \times 10 = 100$ sq. ft. needed for one packet
 $2 \times 100 = 200$ sq. ft. needed for 2 packets
 $200 > 143$, so garden does not have enough space.
- 2) Use a drawing to show the girls' travels. The distances don't have to be exact.



$50 + 30 = 80$ to turn around
 $80 + 10 = 90$ backtrack to restaurant
 $90 + 80 = 170$ miles is total distance driven

- 3) $\$50 + \$20 = \$70$ what they left with
 plus $\$10$ to each
 $\$8 + \$15.65 + \$10 = \33.65 what they spent
 (gifts are $\$5 + \5)
 $\$70 - \$33.65 = \$36.35$ left

Lesson 21

- 1) $3 \times 75 = 225$ pieces of candy
 $225 \div 7 = 32$ R 1
 Scott will have one piece left
- 2) $5 \times \$3 = \15 for baby-sitting
 $3 \times \$4 = \12 for garden work
 $\$15 + \$12 = \$27$ she has
 $\$35 - \$27 = \$8$ more needed to
 buy the game
- 3) $25 \div 5 = 5$ acorns in a group
 $16 \div 4 = 4$ seed pods in a group
 $8 \div 2 = 4$ feathers in a group
 $5 + 4 + 4 = 13$ items given to Mom

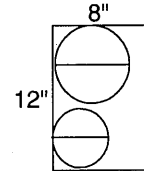
Lesson 27

- 1) $65 \div 13 = 5$ bags per student
 $5 \times 15 = 75$ nuts per student
- 2) You may want to draw this one.
 biggest move is 5, so two times
 biggest move is 10.
 $3 + 5 + 1 = 9$
 $9 - 6 = 3$
 $3 + 10 = 13$, so he is 13 spaces
 from the beginning.
- 3) $3 \times 11 = 33$
 $V = 33 \times$ missing measure
 V is 330
 $330 \div 33 = 10$ which is the missing
 measure of the side of the box top
 $10 \times 11 = 110$ sq. ft. which is area
 of the top of the box.
- 4) $\$360 \div 6 = \60 for each child
 $\$60 + \$20 = \$80$ Kate's money
 $\$80 \div 16 = \5 cost of each gift

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 $1/2 \times 450 = \underline{225}$ yellow toys

You could use decimals or fractions for this problem.

Lesson 18

- 1) $1/4 + 1/2 + 3/4 + 1/4 =$
 $1/4 + 2/4 + 3/4 + 1/4 = 7/4$ or $1 \frac{3}{4}$ pizza left over
 $7/4 \div 1/4 = 7/4 \times 4/1 = \underline{7 \text{ boys}}$
- 2) $5.3 \div 10 = .53$ " water from average snow
 $4.1 \div 5 = .82$ " water from wet snow

If you are unsure whether to multiply or divide, check your answer to see if it makes sense. The actual snowfall in each case was less than what was needed to make an inch of water, so division yields a sensible answer.

$$.53 + .82 + 1.5 = 2.85 \text{'' rounds to } \underline{2.9 \text{'' of water}}$$

- 3) $(2)3.14 \times 3 = 18.84'$ circumference of small garden
 $2 \times 3 = 6'$ diameter of small garden
 $3.14 \times 12 = 37.68'$ circumference of garden with
 doubled diameter
 $37.68 - 18.84 = \underline{18.84' \text{ additional edging needed}}$

In real life this would probably be rounded to 19 or 20 feet.

- 4) $3.14 \times 3^2 = 28.26$ sq. ft. area of small garden
 28 sq. ft. rounded
 $3.14 \times 6^2 = 113.04$ sq. ft. area of large garden
 113 sq. ft. rounded
 $113 \div 28 = 4.04$ or 4 seed packets (rounded)

When you have learned how to divide a decimal by a decimal, try this again using the un-rounded areas.

Control

1. The ratio of the hours the Teenage Mutant Ninja Turtles spend training, to the hours they spend eating pizza is 8:3. If they spend 10 more hours per day training than eating, how many hours do they spend eating pizza?

Equivalent Ratio is 16:6

The turtles spend 6 hours a day eating pizza.

2. Carmelo Anthony's ratio of assists per game to rebounds per game is 4:5. If he had 108 rebounds and assists last season, how many assists did he have? How many rebounds did he have?

Equivalent Ratio is 48:60

Carmelo had 48 assists and 60 rebounds last season.

3. Bruce Wayne splits his budget by using the ratio 13:7. For every \$13 he spends on research, he donates \$7 to local charities. If he spent \$4,800 more on research last week than on donations, how much did he donate?

Equivalent Ratio is 10,400:5,600

Bruce Wayne spent \$10,400 on research and \$5,600 on charities last week.

4. In college Dak Prescott had a record of 5 to 2, which represented his touchdown passes to interceptions. If in his senior year he threw 105 touchdown passes and interceptions, how many touchdowns did he throw?

Equivalent Ratio is 75:30

Dak threw 75 touchdowns his senior year.

5. In Mario Kart the special blocks are programmed to deliver 3 green shells for every 11 bananas. If in the last game characters received 104 more bananas than green shells, how many green shells were received?

Equivalent Ratio is 39:143

There were 39 green shells in the last game.

6. When making sugar skulls we made 5 small ones for every 7 large ones we made. If we made 132 sugar skulls altogether, how many were small? How many were large?

Equivalent Ratio is 55:77

We made 55 small sugar skulls, and 77 large sugar skulls.

7. On the weekend, for every 2 minutes you spend watching puppy videos, you spend 9 minutes watching regular TV. If you spent 572 minutes watching puppy videos and TV, how many minutes did you spend watching puppy videos? Watching TV?

Equivalent Ratio is 104:468

You spent 104 minutes watching puppy videos, and 468 minutes watching TV.

8. The ratio of the minutes the Chargers had the football last night, to the number of minutes the Broncos had the ball was 20 to 9. If the Chargers had the ball for 88 more minutes than the Broncos last night, how many minutes did the Broncos have the ball?

Equivalent Ratio is 160:72

The Broncos had the ball for 72 minutes last night.

Solving Problems using Proportional Reasoning

Name KEY
Date _____

For each problem, set up a proportion. Include the units for each ratio. Then solve for the missing value and label your answer with appropriate units. Round answers to the nearest tenth.

<p>1. Sam raked 3 bags of leaves in 16 minutes. If he continues to work at the same rate, about how long will it take him to rake 5 bags?</p>	<p>Proportion with Units</p> $\frac{3 \text{ bags}}{16 \text{ min}} = \frac{5 \text{ bags}}{x \text{ min}}$	<p>Work + Solution</p> $\begin{aligned} 3x &= 5 \cdot 16 \\ 3x &= 80 \\ x &= 26.7 \\ 26.7 \text{ min} \end{aligned}$
<p>2. Amy earned \$25 after babysitting for 3 hours. If she always charges the same rate, how much will she make after working for 7 hours?</p>	<p>Proportion with Units</p> $\frac{25}{3} = \frac{x}{7}$	<p>Work + Solution</p> $\$58.33$
<p>3. A 2-month membership to the gym costs \$125. Jim would like to be a member for 8 months. What is the total amount he will pay for 8 months?</p>	<p>Proportion with Units</p> $\frac{2}{125} = \frac{8}{x}$	<p>Work + Solution</p> $\$500$
<p>4. Bobby drove 110 miles, and his car used up 5 gallons of gas. How many miles can he drive with 16 gallons of gas?</p>	<p>Proportion with Units</p> $\frac{110}{5} = \frac{x}{16}$	<p>Work + Solution</p> 352 miles
<p>5. Mary ran 2 miles in about 23 minutes. If she continued at the same pace, how long will it take her to run 10 miles?</p>	<p>Proportion with Units</p> $\frac{2}{23} = \frac{10}{x}$	<p>Work + Solution</p> 115 min

Two-step eQUATION MAZE!

Directions: Use your solutions to navigate through the puzzle. SHOW ALL STEPS!!!!

Start! $4x + 10 = -26$ $\underline{-10 \quad -10}$ $4x = -36$ $\underline{\quad \quad 4}$ $x = -9$	$\frac{x}{3} + 10 = 15$ $\underline{-10 \quad -10}$ $3 \cdot \frac{x}{3} = 5 \cdot 3$ $x = 15$	$9 - 2x = 35$ $\underline{-9 \quad -9}$ $\frac{-2x}{-2} = \frac{26}{-2}$ $x = -13$	$\frac{2}{3}x + 15 = 17$ $\underline{-15 \quad -15}$ $\frac{3}{2} \cdot \frac{2}{3}x = 2 \cdot \frac{3}{2}$ $x = 3$
9	-4	15	13
$\frac{x-7}{4} = -2$	$\frac{1}{2}x + 13 = 9$ $\underline{-13 \quad -13}$ $2 \cdot \frac{1}{2}x = -4 \cdot 2$ $x = -8$	$\frac{3}{4}x - 9 = 27$	$-5x - 10 = 10$ $\underline{+10 \quad +10}$ $\frac{-5x}{-5} = \frac{20}{-5}$ $x = -4$
-9	-8	-2	3
14	8	48	-22
$8 - \frac{1}{3}x = 16$ $\underline{-8 \quad -8}$ $3 \cdot -\frac{1}{3}x = 8 \cdot -3$ $x = -24$	$-12x - 17 = -89$ $\underline{+17 \quad +17}$ $\frac{-12x}{-12} = \frac{-72}{-12}$ $x = 6$	$-2 \cdot -8 = \frac{x+11}{-2} \cdot -2$ $\underline{16 \quad -11}$ $5 = x$	$19 - \frac{5}{2}x = 34$
-14	24	44	11
-4	-4	0	-4
-72	-24	-6	17
$28 - 32x = 92$	$5 - x = 12$ $\underline{-5 \quad -5}$ $\frac{-x}{-1} = \frac{7}{-1}$ $x = -7$	$13 - \frac{3}{2}x = 37$ $\underline{-13 \quad -13}$ $\frac{-2}{3} \cdot \frac{-3}{2}x = \frac{24 \cdot -2}{3}$ $x = -16$	END!
7	-7	4	48
-6	-6	-16	-6



Answer Key

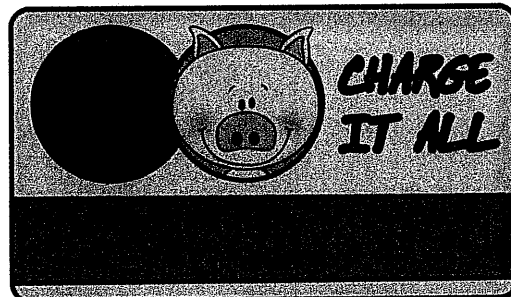
Let's Make A Deal!



Your objective is to find the best deal when given two options. Bubble in the option that is the best deal and write the unit rate of that option on the line provided.

Option 1	VS.	Option 2	Best Deal
Sargento Cheese Slices \$2.48 for 10 Slices	VS.	Velveeta Cheese Slices \$3.18 for 12 Slices	<input checked="" type="radio"/> Option 1 <input type="radio"/> Option 2 Unit Rate: <u>\$0.25 per slice</u>
Oreos \$2.98 for 15.5oz	VS.	Chips Ahoy \$2.50 for 14oz	<input type="radio"/> Option 1 <input checked="" type="radio"/> Option 2 Unit Rate: <u>\$0.18 per oz</u>
Doritos \$4.39 for 11.5oz	VS.	Cheetos \$2.24 for 9.75oz	<input type="radio"/> Option 1 <input checked="" type="radio"/> Option 2 Unit Rate: <u>\$0.23 per oz</u>
Sarah Lee Turkey \$6.58 per lb	VS.	Butterball Turkey \$11.16 for 2lb	<input type="radio"/> Option 1 <input checked="" type="radio"/> Option 2 Unit Rate: <u>\$5.58 per lb</u>
Coca-Cola \$1.29 for 1.25L	VS.	Pepsi \$2.49 for 2L	<input checked="" type="radio"/> Option 1 <input type="radio"/> Option 2 Unit Rate: <u>\$1.03 per L</u>

Option 1	VS.	Option 2	Best Deal
Cheerios \$3.68 for 17oz	VS.	Apple Jacks \$2.89 for 13oz	<input checked="" type="radio"/> Option 1 <input type="radio"/> Option 2 Unit Rate: <u>\$0.22 per oz</u>
Kidney beans \$1.18 per lb	VS.	Lima beans \$2.13 for 2lb	<input type="radio"/> Option 1 <input checked="" type="radio"/> Option 2 Unit Rate: <u>\$1.07 per lb</u>
Goldfish Crackers \$1.99 for 7.2oz	VS.	Cheese-Its \$2.70 for 13.7oz	<input type="radio"/> Option 1 <input checked="" type="radio"/> Option 2 Unit Rate: <u>\$0.18 per oz</u>
Daisy Sour Cream \$1.49 for 8 oz	VS.	Kraft Sour Cream \$2.55 for 16oz	<input type="radio"/> Option 1 <input checked="" type="radio"/> Option 2 Unit Rate: <u>\$0.16 per oz</u>
Crayola Crayons \$6.97 for 120	VS.	Rose Art Crayons \$1.53 for 24	<input checked="" type="radio"/> Option 1 <input type="radio"/> Option 2 Unit Rate: <u>\$0.06 per crayon</u>



Name:

Date:

Topic:

Class:

Main Ideas/Questions	Notes/Examples	
<p>One-Step Equations</p>	<p>1. $m + 12 = 10$ $\quad -12 \quad -12$ <hr/> $m = -2$</p>	<p>2. $-2 = g - 9$ $\quad +9 \quad +9$ <hr/> $7 = g$</p>
	<p>3. $\frac{-7y}{-7} = \frac{-91}{-7}$ <hr/> $y = 13$</p>	<p>4. $\frac{a}{9} = -4 \cdot 9$ <hr/> $a = -36$</p>
<p>Fractions</p> <p>To "get rid" of a fraction, multiply by the <u>reciprocal</u>!</p>	<p>5. $\frac{3}{2} \cdot \frac{2}{3}x = 10 \cdot \frac{3}{2}$ <hr/> $x = 15$</p>	<p>6. $\frac{9}{4} \cdot \frac{4}{9}w = -8 \cdot \frac{9}{4}$ <hr/> $w = -18$</p>
	<p>7. $\frac{-6}{6} \cdot \frac{6}{5}k = 12 \cdot \frac{-5}{6}$ <hr/> $k = -10$</p>	<p>8. $2 \cdot -\frac{1}{2}m = -9 \cdot -2$ <hr/> $m = 18$</p>
<p>Two-Step Equations</p>	<p>To Solve a Two-Step Equation:</p> <ol style="list-style-type: none"> Undo the Addition/Subtraction (to remove constant term) Undo the Multiplication/Division (to remove coefficient) 	
	<p>9. $6x + 8 = 50$ $\quad -8 \quad -8$ <hr/> $6x = 42$ $\quad \frac{6}{6} \quad \frac{6}{6}$ <hr/> $x = 7$</p>	<p>10. $2n - 5 = 11$ $\quad +5 \quad +5$ <hr/> $2n = 16$ $\quad \frac{2}{2} \quad \frac{2}{2}$ <hr/> $n = 8$</p>
	<p>11. $13 = -4k + 9$ $\quad -9 \quad -9$ <hr/> $4 = -4k$ $\quad \frac{-4}{-4} \quad \frac{-4}{-4}$ <hr/> $k = -1$</p>	<p>12. $7 - 3y = 34$ $\quad -7 \quad -7$ <hr/> $-3y = 27$ $\quad \frac{-3}{-3} \quad \frac{27}{-3}$ <hr/> $y = -9$</p>

$$13. \begin{array}{r} \frac{x}{2} - 7 = 9 \\ + 7 \quad + 7 \\ \hline 2 \cdot \frac{x}{2} = 16 \cdot 2 \\ \boxed{x = 32} \end{array}$$

$$14. \begin{array}{r} 11 = \frac{c}{-5} + 8 \\ - 8 \quad - 8 \\ \hline -5 \cdot 3 = \frac{c}{-5} \cdot -5 \\ \boxed{-15 = c} \end{array}$$

$$15. \begin{array}{r} \frac{3}{5}x + 22 = 28 \\ - 22 \quad - 22 \\ \hline \frac{5}{3} \cdot \frac{3}{5}x = 6 \cdot \frac{5}{3} \\ \boxed{x = 10} \end{array}$$

$$16. \begin{array}{r} -\frac{1}{3}m + 1 = -7 \\ - 1 \quad - 1 \\ \hline -3 \cdot -\frac{1}{3}m = -8 \cdot -3 \\ \boxed{m = 24} \end{array}$$

$$17. \begin{array}{r} -10 \div \frac{7}{4}p = -38 \\ + 10 \quad + 10 \\ \hline \frac{4}{7} \cdot \frac{7}{4}p = -28 \cdot \frac{4}{7} \\ \boxed{p = -16} \end{array}$$

$$18. \begin{array}{r} 15 = 9 - \frac{1}{2}x \\ - 9 \quad - 9 \\ \hline -2 \cdot 6 = -\frac{1}{2}x \cdot -2 \\ \boxed{-12 = x} \end{array}$$

Watch Out!

The examples below are different in that the multiplication/division is done FIRST, followed by the addition/subtraction.

$$19. \begin{array}{r} \frac{x+11}{8} = -3 \cdot 8 \\ \hline x+11 = -24 \\ - 11 \quad - 11 \\ \hline \boxed{x = -35} \end{array}$$

$$20. \begin{array}{r} \frac{n-5}{-2} = -7 \cdot -2 \\ \hline n-5 = 14 \\ + 5 \quad + 5 \\ \hline \boxed{n = 19} \end{array}$$

$$21. \begin{array}{r} 1 = \frac{a-13}{-6} \cdot -6 \\ \hline -6 = a-13 \\ + 13 \quad + 13 \\ \hline \boxed{7 = a} \end{array}$$

$$22. \begin{array}{r} 4 = \frac{w+8}{9} \cdot 9 \\ \hline 36 = w+8 \\ - 8 \quad - 8 \\ \hline \boxed{28 = w} \end{array}$$

BEGIN

$3x - 7 = 17$

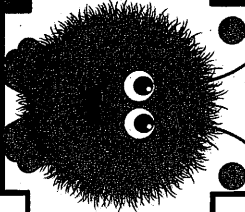
$x = -8$

$6 = 4x - 10$

$x = 6$

$x = 18$

$x = 8$



$x = 4$

$x = 1$

$x = -\frac{16}{3}$

$-3x - 5 = 10$

$x = \frac{5}{3}$

$3 - \frac{1}{5}x = 4$

$x = -5$

$6x - 1 = 5$

$x = 0$

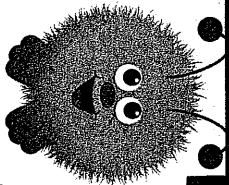
$8 - 3x = 8$

$x = -5$

$x = 5$

$x = \frac{7}{2}$

$x = -5$



$x = 6$

$x = 1$

$5 - 2x = 12$

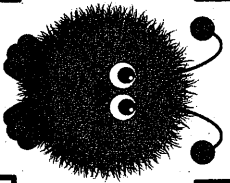
$-x + 5 = 10$

$x = 27$

$x = 6$

$x = 2$

$x = \frac{1}{4}$



$2x + 3 = 11$

$x = 4$

$-10 + 3x = 8$

$x = -\frac{2}{3}$

$4 + 2x = 8$

$x = -2$

$\frac{1}{2} + 2x = 1$

