



Helping With Math

Multiplicative Comparisons and Equations

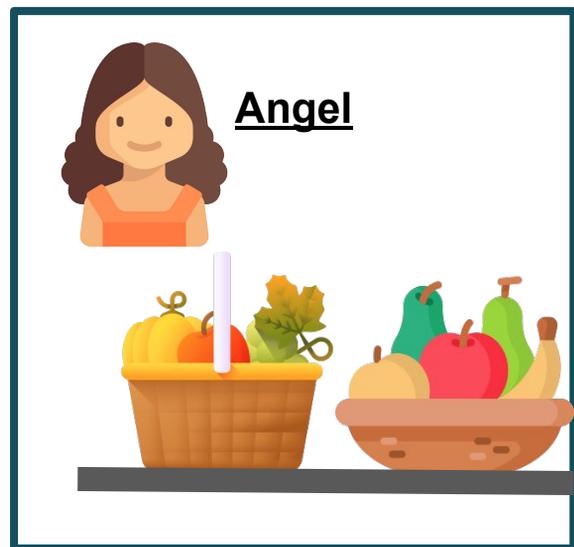
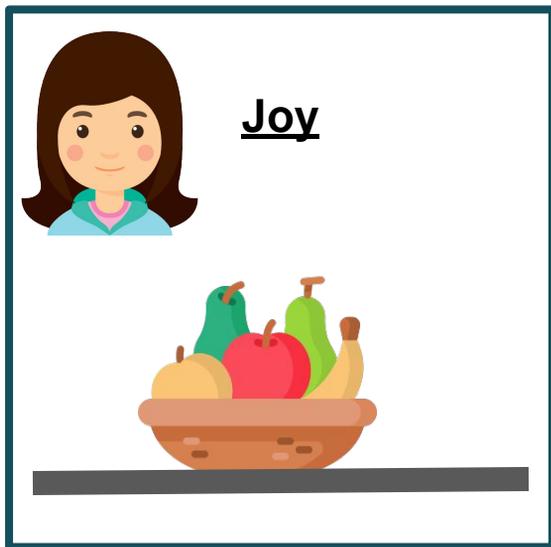


GRADE 4



Multiplicative comparison means comparing two variables to determine an unknown value.

Angel's fruit basket is twice as many as Joy.



- Multiplicative comparison equations are word problems.
- Multiplicative comparison equations are solved through MULTIPLICATION.



KEY WORDS

- A multiplicative comparison problem uses keywords like:
 - twice as many as
 - five times as
 - as old as
 - as much as
 - as big as
 - as long as

For example:

Toby's vegetable stall stands 1 meter.
Jim's stall is thrice as tall as Toby's.



Toby's stall

Jim's stall



PROBLEM SOLVING

How to solve a multiplicative comparison equation?



01

Look for the given

02

Draw the comparison diagram

03

Write the equation

04

Solve the equation

A kilo of pork is \$2. Beef is sold 4 times as much as pork. How much is a kilo of beef?

Step 1 : Look for the given.

A kilo of pork is \$2



A kilo of beef is 4 times as much as a kilo of pork



Step 2: Draw the comparison diagram

\$2	Pork (kg)
-----	-----------

\$2	\$2	\$2	\$2	Beef (kg)
-----	-----	-----	-----	-----------

Step 3: Write the equation.

$$1\text{kg of beef} = \$2 \times 4$$

Step 4: Solve the equation.

$$\begin{aligned} 1\text{kg of beef} &= \$2 \times 4 \\ &= \$8 \end{aligned}$$



PRACTICE EXERCISES

Study the problem below. Provide the correct given, comparison model, equation, and solution by encircling the appropriate column.



Bok choy is sold at £3 per kilogram while kale is sold as twice as much as bok choy. How much is kale sold in kilogram?

	COLUMN A	COLUMN B
GIVEN	<p>Bok choy sold at £3 per kilogram.</p> <p>Kale is twice as much as Bok choy.</p>	<p>Bok choy sold at £3 per kilogram.</p> <p>Bok choy is twice as much as Kale.</p>
COMPARISON MODEL	<p>£3 Bok choy</p> <p>£3 £3 £3 £3 Kale</p>	<p>£3 Bok choy</p> <p>£3 £3 Kale</p>
EQUATION	<p>1 kg of Kale = £3 x 2</p>	<p>1 kg of Kale = £4 x 2</p>
SOLUTION	<p>1 kg of Kale = £3 x 2 = £6</p>	<p>1 kg of Kale = £3 x 4 = £12</p>



TABLE OF ACTIVITIES

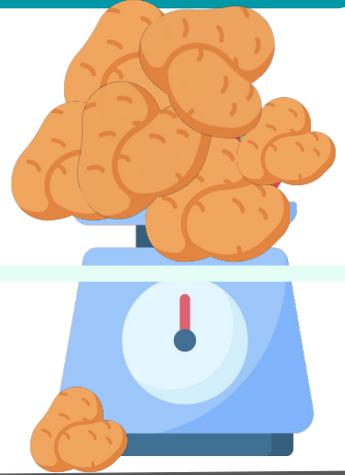
1. What to buy in the market?
2. Everything on SALE!
3. Oh! The green things growing
4. On the road
5. Time to go to the market
6. A yes or a no?
7. Dinner is ready!
8. A Survey
9. People everywhere
10. Everything in the market



WHAT TO BUY IN THE MARKET?

Solve the following multiplicative comparison problems. Provide the given, diagram, equation, and solution in the appropriate space.

1. Teddy bought 3 kilograms of potatoes. John bought 4 times as many potatoes as Teddy did. How many kilogram of potatoes did John buy?



GIVEN _____

DIAGRAM _____

EQUATION _____

SOLUTION _____

2. Minho spent £20 on his favorite spices. Ronald spent five times as much as Minho. How much did Ronald spend in all?

GIVEN _____

DIAGRAM _____

EQUATION _____

SOLUTION _____



EVERYTHING ON S.A.L.E.!

Encircle the number that describes your answer.

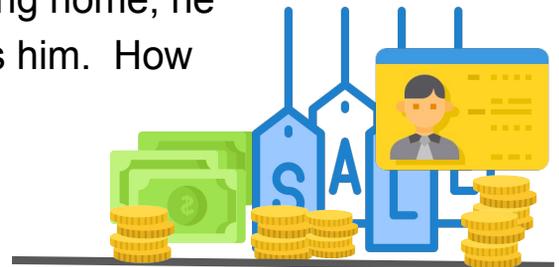
- A. Deidre is a member of the Buyer's Club in their wet market. As a member, he could avail of a 27% discount on pork products and thrice as much on beef products. How many percent off will Deidre get with the beef in his basket?

1. 13%
2. 27%
3. 54%
4. 81%



- B. After a 30% discount, Newt spent £30 after buying vegetables in the market. Upon arriving home, he learned that his mother spent twice as him. How much did Newt's mother spend in all?

1. £15
2. £10
3. £60
4. £90



- C. Helena saved £10, just buying a basket of fruits. She also saved twice as much with the vegetable she bought. How much did she saved from buying vegetables?

1. £10
2. £20
3. £30
4. £40



OH! THE GREEN THINGS GROWING!

Draw a line to match the statement to the corresponding solution.

A kilo of spinach costs £2 . A kilo of cabbage costs two times as much as spinach. How much does a kilo of cabbage costs?



£4

Nico saw 35 baskets of lettuce. Jim saw seven times as much as Nico. How many baskets of lettuce did Jim see?



2 bags

Mrs. Santos bought a bag of kale. Mrs. Rivera bought as twice as many as Mrs. Santos. How many bags of kale did Mrs. Rivera buy?

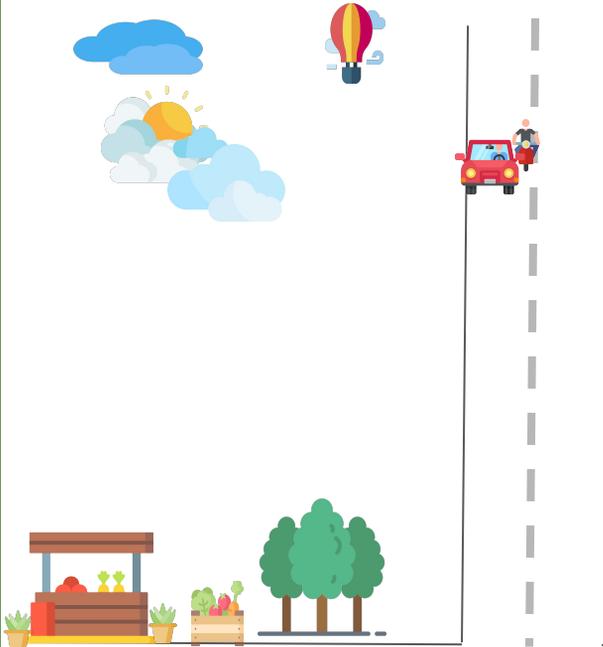


245 baskets

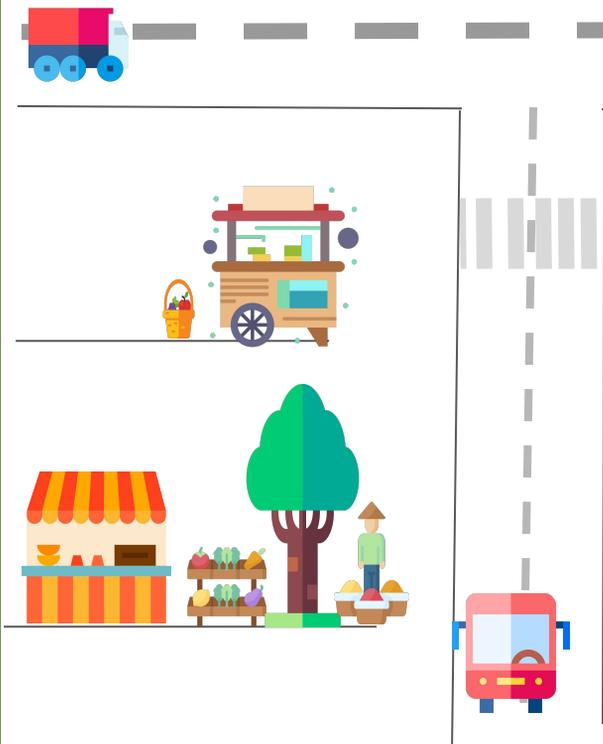


ON THE ROAD

Study the multiplicative statements. Write your answer on the space provided.



1. Every market day, Pipay rents a cab to bring her to the seaport for fresh seafood. During summer, Pipay pays \$10. During winter, Pipay pays thrice as much. How much does Pipay pay to the cab driver during winter?



2. Cliff drives 2 miles to reach the wet market. George drives twice as far as Cliff? How many miles George have to travel to reach the wet market?



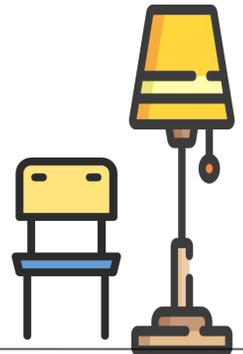
TIME TO GO TO THE MARKET

Read the statements carefully. Write the correct answer in the box.



1. Jennifer goes to the market 4 times a week. Keisha goes twice as often as Jennifer. How often does Keisha go to the market?

2. Last week, Joyce spent 3 hours in the market. This week, she spent 3 times as much. How many hours did she spend in the market last week?



3. Luther prepares for the market day for just 20 minutes. Weng prepares twice as long as Luther. How many minutes does Weng prepare for the market day?



A YES OR A NO?

Study the statements carefully. Express your agreement on the statements by encircling the word YES or NO. If you answered NO, write your solution to correct the statement.

1. Myra rented her fruit stall for one month and paid \$150. Joseph rented his stall 12 times as long. Joseph paid a total of \$1,800.
- _____



YES NO



2. Josiah gained \$450 from selling charcoal last month. This month, he gained 20 times as much. Josiah's profit this month is \$9,200.
- _____



YES NO



3. Last month, Jean received an amount of \$250 as a helper in the vegetable stall. Ryan received twice as much as Jean. Last month, Ryan received \$750.
- _____



YES NO



DINNER IS READY!

Help Brogen decide how much meat to buy. Write your answer in the space provided.

Brogen's office mates are coming over to her house for dinner. She plans to prepare a Sunday roast.

In her list, she needs to buy the following:

- Beef (2 pounds)
- Pork (twice as much as beef)
- Chicken meat (5 times as much as pork)
- Lamb meat (3 times as much as chicken)

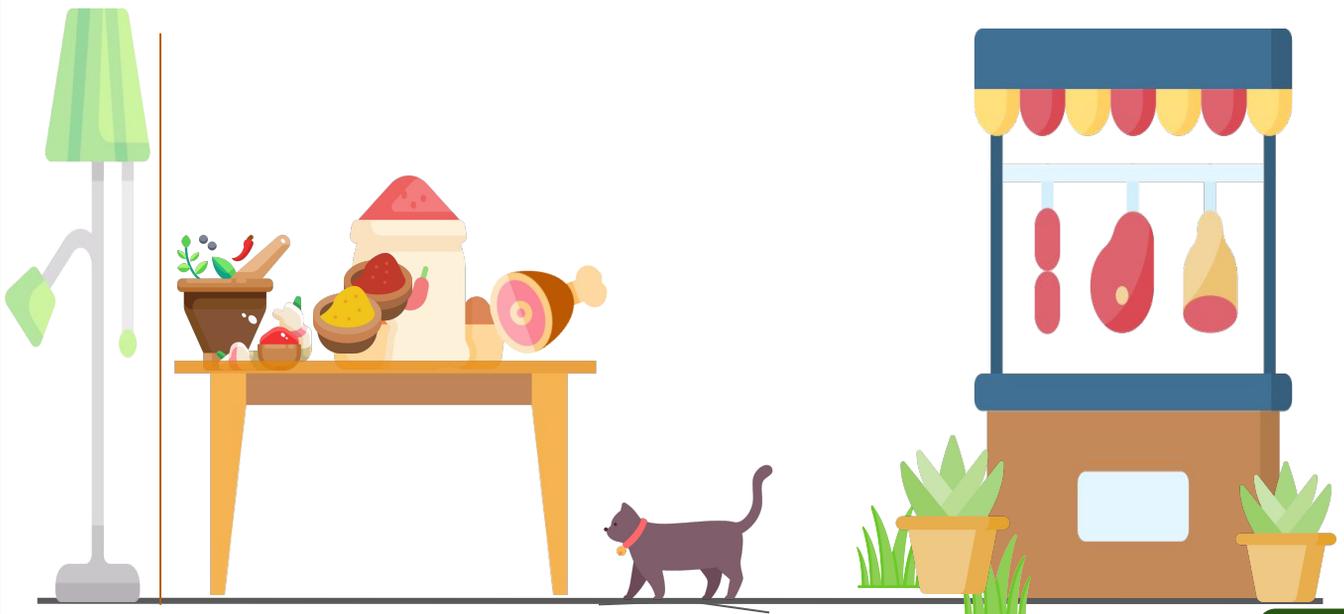
How many pounds of meat does she have to buy from the market?

Beef _____ pounds

Pork _____ pounds

Chicken meat _____ pounds

Lamb meat _____ pounds



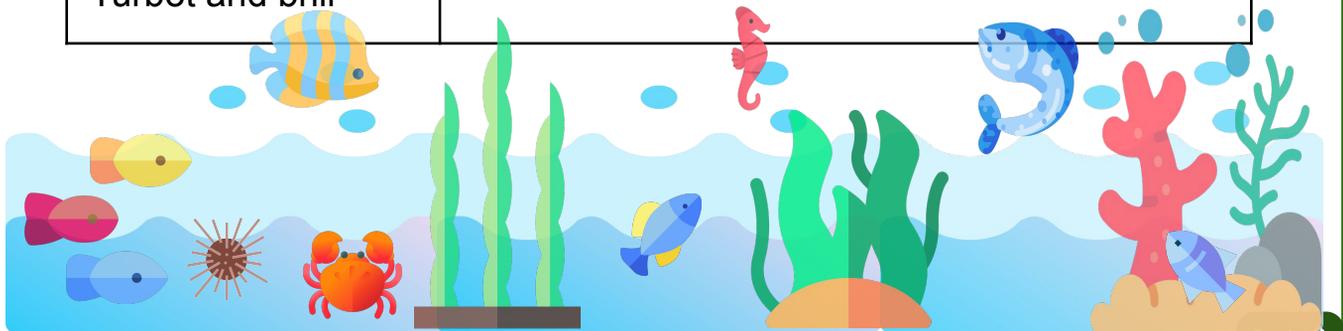
A SURVEY

Complete the table below to accomplish the survey. Solve the comparison statements and write your answer in the corresponding column.

It is a beautiful Wednesday, and all is set for the big day in the market. Jules went to the market earlier than usual. Jules went ahead to Mr. McMahon, his favorite fish vendor. Jules observed that Mr. McMahon has a wide selection of seafood today. Jules saw the following:

- 30 kilograms of Yellowfin Tuna
- 15 kilograms of Salmon
- Cod that is thrice as much as Yellow fin tuna
- Mackerel that is five times as much as salmon
- Turbot and brill that is three times as much as Salmon

Kind	Quantity (kilograms)
Yellowfin Tuna	
Salmon	
Cod	
Mackerel	
Turbot and brill	



PEOPLE EVERYWHERE

Make your own multiplicative comparison statement that corresponds to the diagram in the space provided. Provide the solution in the box provided.

1.

50

Number of people in the vegetable section

--	--	--	--	--

Number of people in the fruit section

Statement and solution



2.

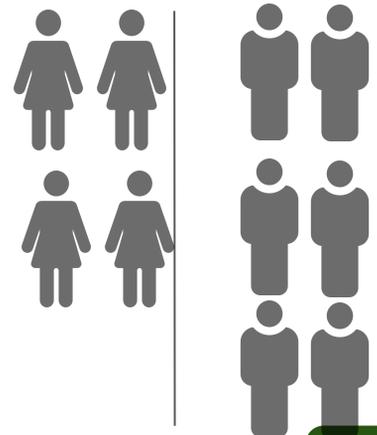
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Number of female vendors in the market

--	--	--	--	--	--	--

Number of male vendors in the market

Statement and solution



EVERYTHING IN THE MARKET

Make your own multiplicative comparison equation. Fill the blank with figures of your choice and write it in the blank provided. In the third column, write the answer.

Ali saw _____ children in the market	Irene saw _____ as many children as Ali.	How many children did Irene see in the market? _____ children
Zumbo bought _____ kgs of brown sugar in the market.	He also needs to buy flour that is _____ times as much as sugar.	How much flour does Zumbo have to buy? _____ kgs of flour



ANSWER GUIDE

Activity 1

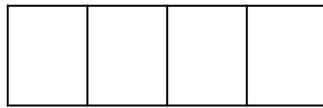
1. Given

Teddy bought 3 kilograms of potato. John bought four times as much as Teddy

Diagram



Teddy bought 3 kilograms of potato



What John bought

Equation: Potatoes J bought = $3 \text{ kgs} \times 4$

Solution

$$\begin{aligned}\text{Potatoes J bought} &= 3 \text{ kgs} \times 4 \\ &= 12 \text{ kgs}\end{aligned}$$

2. Given

Minho spent \$20 on his spice Ronald spend five times as Minho.

Diagram



Minho spent \$20



What Ronald spent

Equation: Money Ronald spent = $\$20 \times 5$

Solution

$$\begin{aligned}\text{Money Ronald spent} &= \$20 \times 5 \\ &= \$100\end{aligned}$$



ANSWER GUIDE

Activity 2

- A. 4
- B. 3
- C. 2

Activity 3

- 1. £4
- 2. 245 baskets
- 3. 2 bags

Activity 4

- 1. \$30
- 2. 4 miles

Activity 5

- 1. 8 times
- 2. 9 hours
- 3. 40 minutes

Activity 6

- 1. Yes
- 2. No.
 $\$ 450 \times 20 = \$ 9,000$
- 3. No.
 $\$ 250 \times 2 = \$ 500$

Activity 7

Beef = 2 pounds
Pork = 4 pounds
Chicken = 20 pounds
Lamb = 60 pounds



ANSWER GUIDE

Activity 8

Yellowfin Tuna	-	30 kilograms
Salmon	-	15 kilograms
Cod	-	90 kilograms
Mackerel	-	75 kilograms
Turbot and drill	-	45 kilograms

Activity 9

There are 50 people in the vegetable section. There are five times as much people in the fruit section. There are 300 people in the vegetable and fruit section.

There are 23 female vendors. There are seven times as much male vendors. There are 184 vendors in all.

Activity 10

Sample answers:

1. 5 children, seven times as many children. 35 children in all
2. 12 kilograms of sugar, four times, 48 kilograms of flour.



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