

CSI: ELEMENTARY



UNIT 2

Problem Solving
with
Multiplication
& Division

Crime Scene Decoders Elementary: Problem Solving with Multiplication & Division

Standard Focus: Number Sense and Operations

Time Range: 1-3 Days

Supplies: Pencil and Paper

Topics of Focus :

- Word Problems with Multiplications & Division
- Operations with Decimals
- Using Price Lists
- Unit Prices

Numbers & Operations in Base 10	4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
Operations & Algebraic Thinking	4.OA.A.2	Multiply or divide to solve word problems involving multiplicative comparison, using drawings or equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. 1
Number & Operations in Base 10	5.NBT.B.5	Multiply multi-digit whole numbers using the standard algorithm.
Number & Operations in Base 10	5.NBT.B.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Procedures:

- A.) Students will begin on the report from Chief Harris, the possible suspects, and crime scene puzzles.
 - B.) Students will work in groups or individually to solve the crime.
 - C.) Students will determine which suspect should be arrested.
 - D.) Students will create a portfolio of evidence proving that they have arrested the right person and will demonstrate their understanding of their mathematical content present in the problem.
- Extension) Students can present their evidence to the class as an oral presentation.

Crime Scene Decoders

Elementary: Problem Solving with Multiplication & Division



Detectives,

What's another month without a series of high profile robberies at the hands of the Mathemagicians? The evil genius terrorist group has pulled off another elaborate crime spree that has left the continent of Africa in disarray. As the Mathemagicians work to build their world conquering device, our investigators are trying to piece together the thefts by an anonymous associate, the Equal Dupliator.

A cryptic text message was sent to police but it requires the puzzles to be cracked. We've been told that the solution to the cryptic text message will calculate to the Equal Dupliator's favorite number.

Thus far there are six suspects that police have questioned. You need to be prepared to solve your case and demonstrate your understanding of the forces of the Equal Dupliator is known to use in the notes.



- Word Problems with Multiplications & Division
- Operations with Integers
- Using Price Lists
- Unit Prices

Good luck to you,

Chief Harris



CRIME SCENE DECODERS: THE EVIDENCE



NAME: _____

1.

CLUE

2.

CLUE

3.

CLUE

4.

CLUE

5.

CLUE

6.

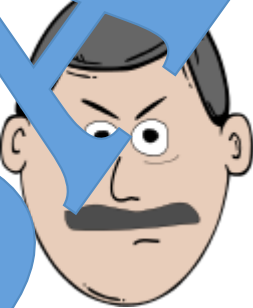
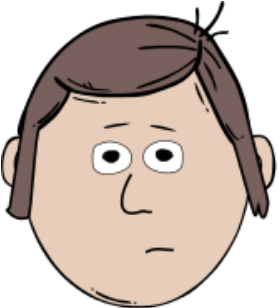
CLUE

TOXIC TEXT MESSAGE

SUSPECT

Who is the Equal Duplicator?



Name: Marie Occupation: Hairdresser Favorite Number: 108 	Name: Aminata Occupation: Restaurant Owner Favorite Number: 136 
Name: Kip Occupation: Trust Fund Manager Favorite Number: 79 	Name: Jessica Occupation: Musician Favorite Number: 119 
Name: Charles Occupation: Pizzeria Owner Favorite Number: 131 	Name: Charlie Occupation: Pizza Boy Favorite Number: 132 

Scene #1 Safari Outpost -- Nairobi, Kenya



In the middle of the night, The Equal Duplicator flew a helicopter into the camp and stole all of the gasoline.



It is time for the Equal Duplicator to rule the world! If you can figure out my puzzles you might be able to stop me.

Answer the following word problems and find the smallest number to reveal your name.

Tickets

Food

Miles

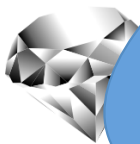
The group rate for four people for a safari is \$8,000. How much money would it cost each person?	For the 13 days of the trip it is suggested to bring money for food each day. How many meals do you need? Bring money	On the 9 day safari the guide says that the group will travel 225 miles. About how many miles will the group travel each day?
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The answer to the smallest number will be equal to X.

X = _____

Scene #2 Victoria Falls -- Johannesburg, South Africa

Investigators believe the suspect stole 4.5 billion dollars worth of raw diamonds.



THE DIAMOND MINE



Two diamond mines are arguing about who finds more diamonds each week. Aminata works 5 days a week for 8 hours a day and finds 6 diamonds every hour. Djiby works 4 days a week for 9 hours a day and finds 7 diamonds every hour.

Determine who finds more diamonds and choose the clue under their name.

AMINATA



a = 5

DJIBY



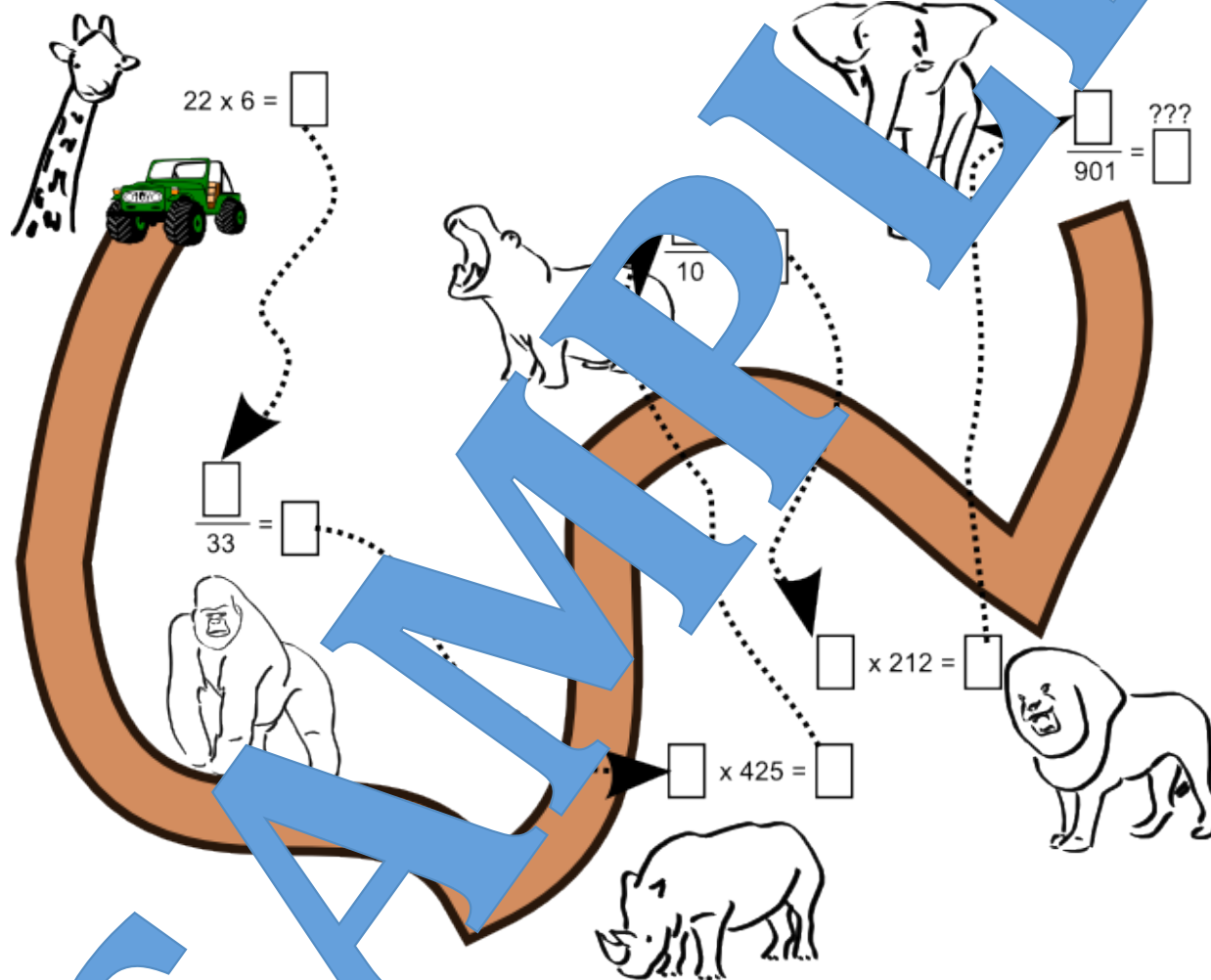
y = 4

A park ranger noticed that 11 baby zebras were zebra-napped!



HEART OF AFRICA

Fill in the blank spaces with the correct answers and move on to the next animal to solve a new problem.



Find the answer to the ??? blank and discover a clue.

40 ↓ a=100	50 ↓ b=200	60 ↓ y=300	70 ↓ z=400
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Scene #4 Amanar Restaurant -- Timbuktu, Mali



The Equal Duplicator broke into a noteworthy garden and stole rare plants.



I'm hungry. Which order would cost less? The lesser of the order and its price will be your next clue.

Order B 2 Sambusa, 4 Fufu, 3 Goat Stew and 1 Okra Stew
Order Z 5 Vitumba, 2 Friend Plantain 2 Goat Stew and 3 Okra Stew

Amanar Restaurant	
Sambusa	\$3
Vitumba	\$2
Fried Plantain	\$5
Fufu	\$4
Goat Stew	\$12
Okra Stew	\$10

=

Scene #5 Market -- Freetown, Sierra Leone

A seamstress was surprised to find many of her African fabrics were stolen. The Equal Duplicator left the



Kanga African Dress Sale

Kidjo Offer: You can buy 3 kangas for \$63

Maathai Offer: You can buy 7 kangas for \$133

What is the difference in the unit price between the two offers? **This difference will be your next clue.**



c = _____

Scene #6 Nile River Cruises -- Aswan, Egypt

Egyptian police were stunned to find four ferries were stolen in the night. They found this note and were later sent a cryptic text message.



Before I take over the world, I figured I'd make you figure out a puzzle of leftovers.



NILE RIVER CRUISE

1. In order to reach the port, people must take a small ferry across the river. 50 people are waiting for the ferry and 28 people can ride the ferry each time. How many people will ride the ferry on the last trip?
2. The dinner tables can fit 8 people. There are 137 people waiting to eat. How many people will sit together at the last table?
3. The Nile River scuba team can take 12 people at a time. There are 89 people waiting for a turn. How many people will be in the last group?

If you add up the leftovers from each problem, what number would you get?

31	33
y = 31	z = 33

CRYPTIC MESSAGE PUZZLE SOLVER TEXT MESSAGE

You can't catch me! ~The Equal Duplicator

$$A + B + C - X - Y - Z$$

Thank you for being my Math Friend!

If you liked this

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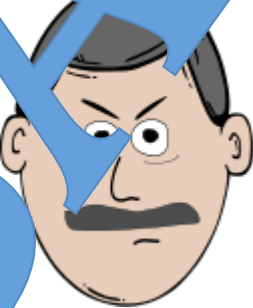
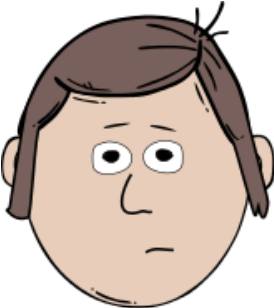


Math it Up.

Boondigggy.

Who is the Equal Duplicator?



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Food

Miles

The group rate for four people for a safari is \$8,000. How much money would it cost each person?

2000

For the 13 days of the safari it is suggested to bring money for food each day. How many meals do you need? Bring money

39

On the 9 day safari the guide says that the group will travel 225 miles. About how many miles will the group travel each day?

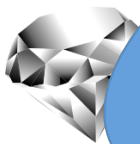
25

The answer to the smallest number will be equal to X.

25

Scene #2 Victoria Falls -- Johannesburg, South Africa

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THE DIAMOND MINE



Two diamond mines are arguing about who finds more diamonds each week. Aminata works 5 days a week for 8 hours a day and finds 6 diamonds every hour. Djiby works 4 days a week for 9 hours a day and finds 7 diamonds every hour.

Determine who finds more diamonds and choose the clue under their name.

AMINATA 240

a = 5

DJIBY 252

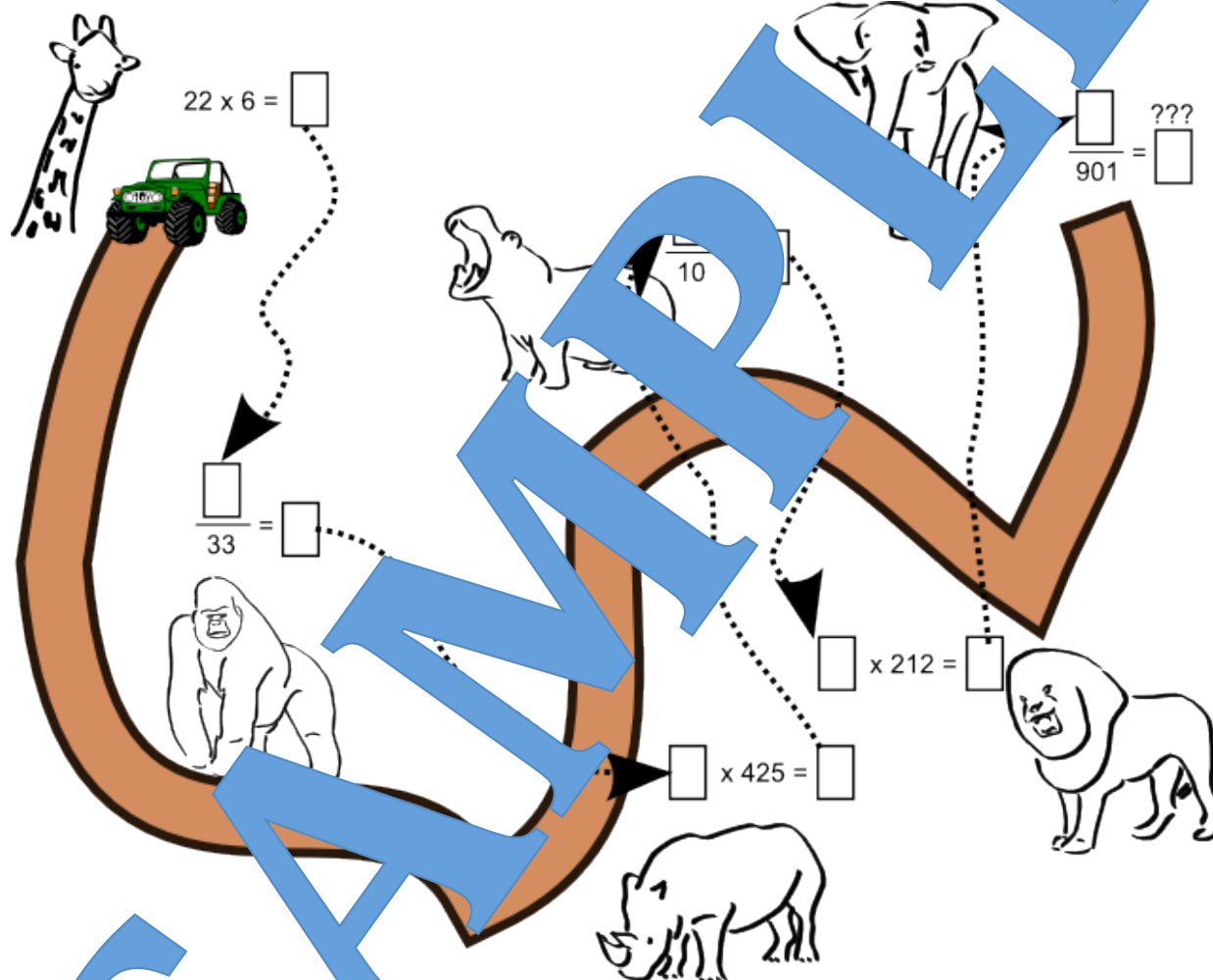
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A park ranger noticed that 11 baby zebras were zebra-napped!



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I'm hungry. Which order would cost less? The lesser of the order and its price will be your next clue.

Order B	
2 Sambusa, 4 Fufu, 3 Goat Stew and 1 Okra Stew. $6+16+36+10=68$	
Order Z	
5 Vitumba, 2 Friend Plaintains, 2 Stew and 3 Okra Stew $10+10+24+30=74$	

Amanar Restaurant	
Sambusa	\$3
Vitumba	\$2
Fried Plaintain	\$5
Fufu	\$4
Goat Stew	\$12
Okra Stew	\$10

b _____ = _____ **c**

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c = _____ **2**

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1. In order to reach the port, people must take a small ferry across the river. 100 people are waiting for the ferry and 28 people can fit on the ferry each time. How many people will ride the ferry on the last trip? **22**
2. The dinner tables can fit 8 people. There are 132 people waiting to eat. How many people will sit together at the last table? **4**
3. The Nile River scuba team can take 25 people at a time. There are 89 people waiting for a turn. How many people will be in the last group? **5**

If you add up the leftovers from each problem, what number would you get?

22 y = 31	33 z = 33
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CRYPTIC MESSAGE PUZZLE SOLVER TEXT MESSAGE

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$$A + B + C - X - Y - Z$$

$$(100) + (68) + (2) - (25) - (4) - (33) = 108$$