

**MATH MYSTERY**

**EARTH DAY**

**CASE OF THE**

**LITTERBUG**

**GRADE**

**1**



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# Teacher Resource

## Instructions

### PREPARATION

Print and copy pages 4-11 for your students. You can do either of the following:

- Combine the pages to form a booklet for each student to work on; OR
- Hand out worksheets as you want students to work on them – please note that if you choose this option, students will always need the 'Possible Suspects' page handy.
- If it is a difficult skill or something not yet done with your students, demonstration and a lesson before completing that clue is recommended.
- You could get students to work independently, or in pairs/groups.
- Important details about each suspect on page 5 are in a box below each image. This information may be useful when eliminating from some clues.

**IMPORTANT: The clues must be completed in the order I have arranged them in i.e. 1-5!**

### HOW TO USE

Read through the article on page 4 'Math Mystery: Case of the Litterbug' to set up the activity and engage students.

Instruct students that they will need to keep referring back to their Possible Suspects list after solving each clue.

Students work through each clue, either guided by the teacher or independently (your choice). After completing a math worksheet, if students completed the questions correctly, a clue will be revealed. For example: '*The Litterbug has less than eight legs*', after discovering this clue, students will need to use their knowledge that spiders have eight legs (can count legs on the profile pictures) and so cross off Itsy the Spider from the list.

Once students have correctly completed all of the clues, only one suspect will remain and that suspect is the Litterbug. On page 11, the teacher ticks off the '*Well done . . .*' box and the student can receive an Award (provided on page 18) if they declare the correct suspect. If a student gets the wrong suspect, tick the second box "*Oops! Try again,*" and instruct the student to go over their work to see where they went wrong.

### ANSWERS

I have provided answer sheets for all of the clues, as well as who the Litterbug is! You will find these on pages 12-17. This includes the elimination process of suspects post each clue (color coded guide with comments on answer sheets).

### AWARDS

On page 18 you will find awards that you can print and give to students who solve the case correctly. I suggest making it a rule that students complete all of the questions on each worksheet to be eligible for the award (even if they can guess what the clue is without finishing all of the math questions!). You could also make it a condition that students show their working out on the back of the page or on a separate piece of paper if applicable.

**If you need help, have any questions, or notice an error in my work please email me on [JJResourceCreations@gmail.com](mailto:JJResourceCreations@gmail.com)**

Thanks! 😊

# MATH MYSTERY: CASE OF THE LITTERBUG



Date: \_\_\_\_\_

Mathhattan was once a beautiful place. Lately however, a pollution problem has crept into the city. Trash is lying all over the place and the future of this town is in trouble!

The police have collected a range of data about the increase in litter being left all over town. Together with the results and some statements taken from witnesses, it can be concluded that a litterbug is on the loose! This litterbug must be caught in order to stop it from ruining our environment with anymore rubbish.

Bernie, a witness, exclaimed, "I saw a mischievous bug throwing trash all over the place! I don't understand why anyone or anything would want to make our town look like a garbage dump!"

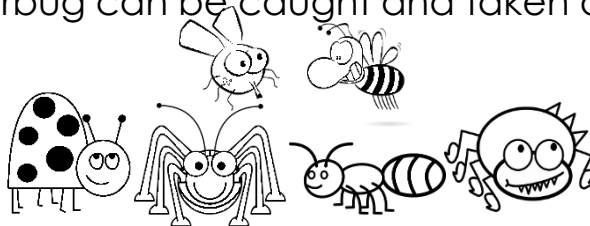
Liam, a student at Mathhattan Elementary, said, "I never thought an actual bug could spread so much trash. It's so sad, because our school has been trying really hard to do what we can to take care of the environment."

The Mayor of Mathhattan released the following statement, "It has come to our attention that there is a litterbug on the loose. We are appealing to the public for help on the case and we hope the bug will shortly be apprehended."

## MATH DETECTIVE NEEDED TO CATCH THE LITTERBUG

The police have made a list of all the possible bug suspects. However, they need a super detective with math skills to help them solve this case.

Let's hope the litterbug can be caught and taken out with the trash!

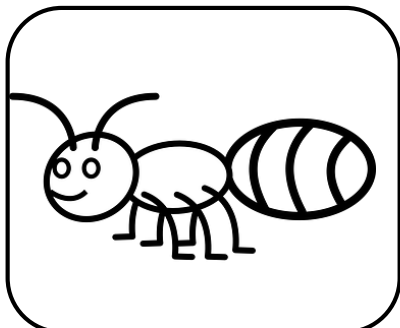


Name: \_\_\_\_\_

# POSSIBLE SUSPECTS

Solve the clues and then cross the suspects off the list until one remains! The last suspect remaining is the Litterbug!

## Arnie the Ant

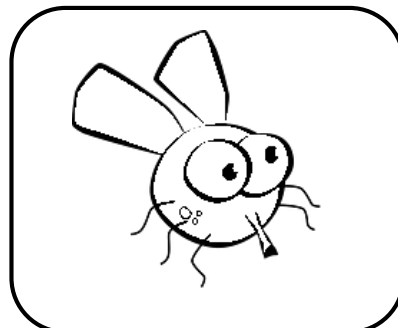


*Color:* Brown  
*Moves:* Slow  
*Can Fly?* NO

Important information about each suspect can be found in the box below its picture!

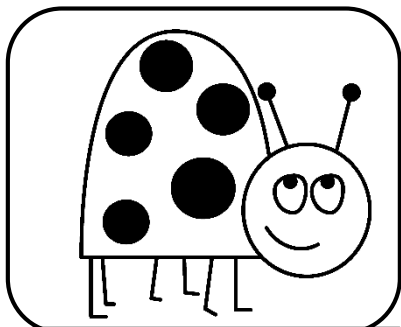
**GOOD LUCK!**

## Stitch the Fly



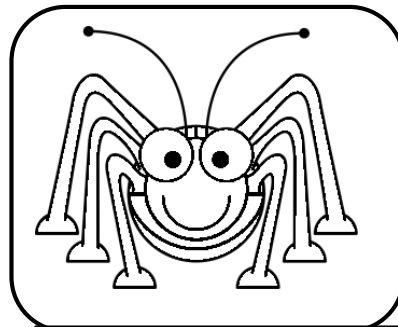
*Color:* Yellow  
*Moves:* Slow  
*Can Fly?* YES

## Luna the Ladybug



*Color:* Red  
*Moves:* Fast  
*Can Fly?* YES

## Hop the Grasshopper



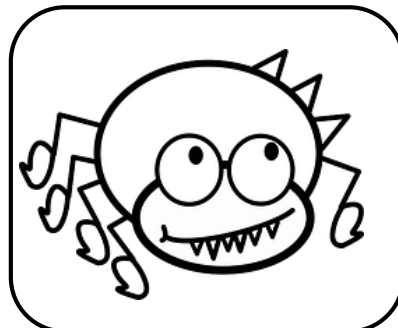
*Color:* Green  
*Moves:* Fast  
*Can Fly?* NO

## Buzz the Bee



*Color:* Yellow  
*Moves:* Fast  
*Can Fly?* YES

## Itsy the Spider



*Color:* Brown  
*Moves:* Fast  
*Can Fly?* NO

Name: \_\_\_\_\_

# MAKING 10: Fill in the Missing Number – CLUE 1

Crack the code by filling in the missing number to make **10**. Use your answers to match and place the letters in the boxes to reveal the clue. Put the letter in every box that it matches your answer in (there may be more than one!) The first one has been done for you.

9	5	0

7	3	9	9	0	4	20	8	10	

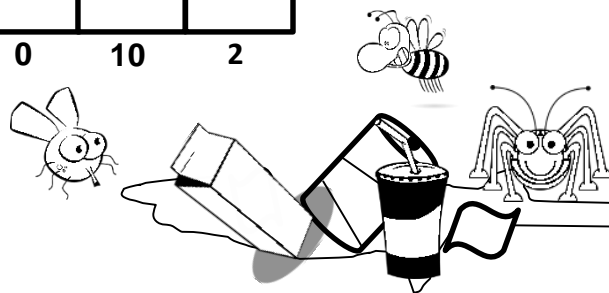
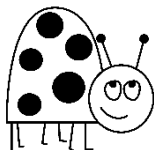
	A	
5	1	2

7	0	2	2

		A	
9	5	1	6

0	3	10	5	9

7	0	10	2



$$9 + \frac{1}{A} = 10$$

$$7 + \frac{\quad}{I} = 10$$

$$6 + \frac{\quad}{R} = 10$$

$$12 - \frac{\quad}{S} = 10$$

$$15 - \frac{\quad}{H} = 10$$

$$19 - \frac{\quad}{T} = 10$$

$$2 + \frac{\quad}{U} = 10$$

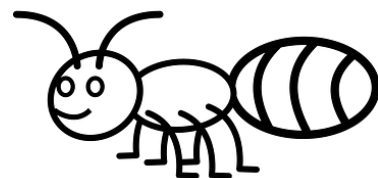
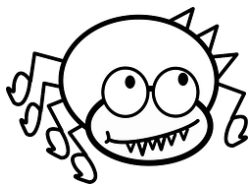
$$3 + \frac{\quad}{L} = 10$$

$$10 + \frac{\quad}{E} = 10$$

$$16 - \frac{\quad}{N} = 10$$

$$20 - \frac{\quad}{G} = 10$$

$$30 - \frac{\quad}{B} = 10$$



Name: \_\_\_\_\_

# ADDING THREE NUMBERS – CLUE 2

Crack the code by adding the numbers. Use your answers to match and place the letters in the boxes to reveal the clue. Put the letter in every box that it matches your answer in (there may be more than one!) The first one has been done for you.

20	11	11

10	19

	H	
14	7	4

20	15	14	3

H			
7	20	18	4

12	4	4	15

10	5	14

10	19

14	10	9	15

$$1 + 2 + 4 = \frac{7}{H}$$

$$2 + 2 + 1 = \frac{\quad}{U}$$

$$3 + 1 + 6 = \frac{\quad}{O}$$

$$4 + 6 + 2 = \frac{\quad}{B}$$

$$1 + 1 + 1 = \frac{\quad}{S}$$

$$5 + 5 + 5 = \frac{\quad}{N}$$

$$1 + 9 + 8 = \frac{\quad}{V}$$

$$7 + 2 + 2 = \frac{\quad}{L}$$

$$8 + 4 + 7 = \frac{\quad}{F}$$

$$2 + 1 + 1 = \frac{\quad}{E}$$

$$9 + 9 + 2 = \frac{\quad}{A}$$

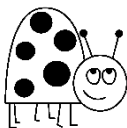
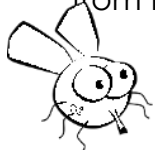
$$3 + 3 + 3 = \frac{\quad}{W}$$

$$6 + 2 + 6 = \frac{\quad}{T}$$

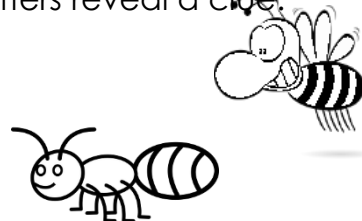


# ORDERING NUMBERS - CLUE 3

Discover another clue by arranging the numbers below from least to greatest. Cut out the numbers (paired with letters) at the bottom of the page, arrange and paste them from least to greatest into the empty boxes to make the letters reveal a clue.

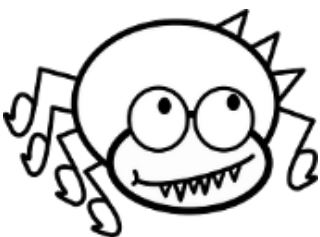


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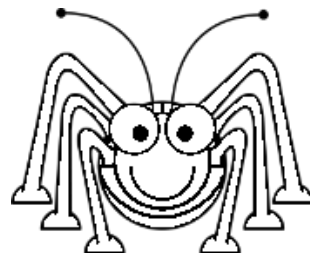


--	--	--	--	--	--	--	--	--

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20 E	44 S	4 H	27 U	49 S	31 M	10 I	22 R	45 F
---------	---------	--------	---------	---------	---------	---------	---------	---------

40 V	14 T	50 T	1 T	23 B	8 L	47 A	5 E	36 O
---------	---------	---------	--------	---------	--------	---------	--------	---------

16 T	30 G	42 E
---------	---------	---------

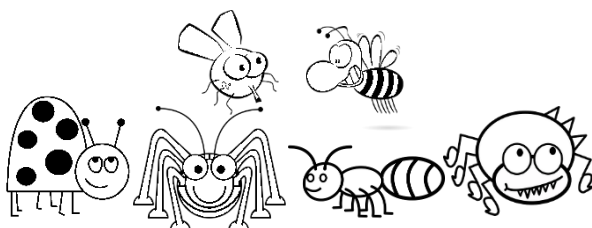


# COMPARING NUMBERS – CLUE 4

An unusual witness has given you instructions to color all of the boxes with **numbers less than 50** in red and all of the boxes with numbers **greater than 50** in blue. Doing this will reveal important information about the litterbug.

72	2	16	25	54	60	30	11	89	74	45	56	90	36	63
93	9	58	89	65	40	85	77	41	85	32	47	60	21	99
55	18	96	78	67	26	14	46	34	92	29	66	25	43	81
88	39	6	35	53	33	69	72	38	97	17	74	59	20	51
52	67	84	90	82	71	60	80	90	70	74	86	92	98	79
79	29	19	39	89	49	59	99	85	27	51	54	68	38	91
66	36	89	98	72	27	63	77	83	97	48	84	31	89	94
99	22	38	63	53	3	52	96	92	88	85	46	55	64	73
64	32	72	82	94	33	76	56	67	87	80	24	90	62	81
54	42	59	68	89	11	10	15	79	97	83	7	86	74	93
67	52	78	92	51	84	60	75	72	91	80	57	68	77	82

**Read each number in the grid:**  
**NUMBERS LESS THAN 50 – COLOR RED**  
**NUMBERS GREATER THAN 50 – COLOR BLUE**



Name: \_\_\_\_\_

# ADDITION WORD PROBLEMS – CLUE 5

Crack the code by solving the addition word problems. Use your answers (numbers only) to match and place the letters in the boxes to reveal the clue. Put the letter in every box that it matches your answer in (there may be more than one!) The first one has been done for you.

--	--	--

7      16      10

										G
--	--	--	--	--	--	--	--	--	--	---

19      15      7      7      10      14      11      5      8

--	--	--

16      12      20

--

12

				G		
--	--	--	--	---	--	--

20      7      15      3      8      10      14

Molly found 6 apple cores and 2 pear cores on the floor. How many cores did Molly find on the floor? **8 cores**

G

Dan picked up 5 pieces of rubbish and Sam picked up 7 pieces of rubbish. How many pieces of rubbish did Dan and Sam pick up? \_\_\_\_\_

A

Liam found 8 burger wrappers and 2 empty drink cups in the garden. How many pieces of rubbish did Liam find in his garden? \_\_\_\_\_

E

Sharon picked up 9 pieces of rubbish in the morning and another 6 pieces of rubbish in the afternoon. How many pieces of rubbish did Sharon pick up that day? \_\_\_\_\_

I

Tracy saw 3 crisp packets and 4 candy wrappers on her lawn. How many pieces of rubbish did Tracy see on her lawn? \_\_\_\_\_

T

Pat recycled 4 brown boxes and 7 blue boxes. How many boxes did Pat recycle? \_\_\_\_\_

B

Anna collected 12 red cans and 4 yellow cans to put in the recycling bin. How many cans did Anna collect for the recycling bin? \_\_\_\_\_

H

Ben found 10 pieces of rubbish on Monday and another 9 pieces of rubbish on Tuesday. How many pieces of rubbish did Ben find over both days? \_\_\_\_\_

L

Penny recycled 11 egg cartons and 3 milk cartons. How many cartons did Penny recycle? \_\_\_\_\_

R

Pete carried 3 bags of trash and Kate carried 2 bags of trash. How many bags of trash did Pete and Kate carry? \_\_\_\_\_

U

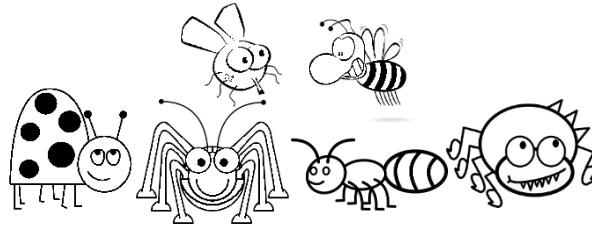
Troy planted 2 daisy seeds and 18 sunflower seeds. How many seeds did Troy plant? \_\_\_\_\_

S

Ned watered 2 apples trees and 1 pear tree. How many trees did Ned water? \_\_\_\_\_

N

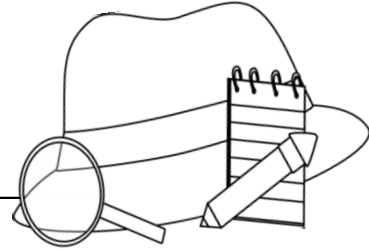
# SOLVE THE MYSTERY: CASE OF THE LITTERBUG



**Detective**

\_\_\_\_\_

*(your name)*



**Has discovered that the Litterbug is:**

\_\_\_\_\_

## Clues Checklist:

Clue 1

Clue 2

Clue 3

Clue 4

Clue 5

## Teacher to check and tick

**Well done you have caught the litterbug and saved the environment!**

**!**  **Oops! No that is not the litterbug. Go over, check your clues and try again.**

Name: \_\_\_\_\_

# ANSWER SHEET – CLUE 1

Crack the code by filling in the missing number to make **10**. Use your answers to match and place the letters in the boxes to reveal the clue. Put the letter in every box that it matches your answer in (there may be more than one!) The first one has been done for you.

T	H	E
9	5	0

L	I	T	T	E	R	B	U	G
7	3	9	9	0	4	20	8	10

H	A	S
5	1	2

L	E	S	S
7	0	2	2

T	H	A	N
9	5	1	6

E	I	G	H	T
0	3	10	5	9

L	E	G	S
7	0	10	2

$$9 + \frac{1}{A} = 10$$

$$7 + \frac{3}{I} = 10$$

$$6 + \frac{4}{R} = 10$$

$$12 - \frac{2}{S} = 10$$

$$15 - \frac{5}{H} = 10$$

$$19 - \frac{9}{T} = 10$$

$$2 + \frac{8}{U} = 10$$

$$3 + \frac{7}{L} = 10$$

$$10 + \frac{0}{E} = 10$$

$$16 - \frac{6}{N} = 10$$

$$20 - \frac{10}{G} = 10$$

$$30 - \frac{20}{B} = 10$$

Cross Itsy the Spider off the list.

Name: \_\_\_\_\_

# ANSWER SHEET – CLUE 2

Crack the code adding the numbers. Use your answers to match and place the letters in the boxes to reveal the clue. Put the letter in every box that it matches your answer in (there may be more than one!) The first one has been done for you.

A	L	L
20	11	11

O	F
10	19

T	H	E
14	7	4

A	N	T	S
20	15	14	3

H	A	V	E
7	20	18	4

B	E	E	N
12	4	4	15

O	U	T
10	5	14

O	F
10	19

T	O	W	N
14	10	9	15

$$1 + 2 + 4 = \frac{7}{H}$$

$$2 + 2 + 1 = \frac{5}{U}$$

$$3 + 1 + 6 = \frac{10}{O}$$

$$4 + 6 + 2 = \frac{12}{B}$$

$$1 + 1 + 1 = \frac{3}{S}$$

$$5 + 5 + 5 = \frac{15}{N}$$

$$1 + 9 + 8 = \frac{18}{V}$$

$$7 + 2 + 2 = \frac{11}{L}$$

$$8 + 4 + 7 = \frac{19}{F}$$

$$2 + 1 + 1 = \frac{4}{E}$$

$$9 + 9 + 2 = \frac{20}{A}$$

$$3 + 3 + 3 = \frac{9}{W}$$

$$6 + 2 + 6 = \frac{14}{T}$$

Cross Arnie the Ant off the list

# ANSWER SHEET - CLUE 3

Discover another clue by arranging the numbers below from least to greatest. Cut out the numbers (paired with letters) at the bottom of the page, arrange and paste them from least to greatest into the empty boxes to make the letters reveal a clue.

1	4	5
T	H	E

8	10	14	16	20	22	23	27	30
L	I	T	T	E	R	B	U	G

31	36	40	42	44
M	O	V	E	S

45	47	49	50
F	A	S	T

Cross off who moves slow.

Name: \_\_\_\_\_

# ANSWER SHEET – CLUE 4

An unusual witness has given you instructions to color all of the boxes with **numbers less than 50** in red and all of the **greater than 50** in blue. Doing this will reveal important information about the litterbug.

72	2	16	25	54	60	30	11	89	74	45	56	90	36	63
93	9	58	89	65	40	85	77	41	85	32	47	60	21	99
55	18	96	78	67	26	14	46	34	92	29	66	25	43	81
88	39	6	35	53	33	69	72	38	97	17	74	59	20	51
52	67	84	90	82	71	60	80	90	70	74	86	92	98	79
79	29	19	39	89	49	59	99	85	27	51	54	68	38	91
66	36	89	98	72	27	63	77	83	97	48	84	31	89	94
99	22	38	63	53	3	52	96	92	88	85	46	55	64	73
64	32	72	82	94	33	76	56	67	87	80	24	90	62	81
54	42	59	68	89	11	10	15	79	97	83	7	86	74	93
67	52	78	92	51	84	60	75	72	91	80	57	68	77	82

**Read each number in the grid:**  
**NUMBERS LESS THAN 50 – COLOR RED**  
**NUMBERS GREATER THAN 50 – COLOR BLUE**

Cross off suspects who cannot fly.

Name: \_\_\_\_\_

# ANSWER SHEET – CLUE 5

Crack the code solving the addition word problems. Use your answers to match and place the letters in the boxes to reveal the clue. Put the letter in every box that it matches your answer in (there may be more than one!) The first one has been done for you.

T	H	E
7	16	10

L	I	T	T	E	R	B	U	G
19	15	7	7	10	14	11	5	8

H	A	S
16	12	20

A
12

S	T	I	N	G	E	R
20	7	15	3	8	10	14

Molly found 6 apple cores and 2 pear cores on the floor. How many cores did Molly find on the floor? 8

G

Liam found 8 burger wrappers and 2 empty drink cups in the garden. How many pieces of rubbish did Liam find in his garden? 10

E

Tracy saw 3 crisp packets and 4 candy wrappers on her lawn. How many pieces of rubbish did Tracy see on her lawn? 7

T

Anna collected 12 red cans and 4 yellow cans to put in the recycling bin. How many cans did Anna collect for the recycling bin? 16

H

Penny recycled 11 egg cartons and 3 milk cartons. How many cartons did Penny recycle? 14

R

Troy planted 2 daisy seeds and 18 sunflower seeds. How many seeds did Troy plant altogether? 20

S

Dan picked up 5 pieces of rubbish and Sam picked up 7 pieces of rubbish. How many pieces of rubbish did Dan and Sam pick up altogether? 12

A

Sharon picked up 9 pieces of trash in the morning and another 6 pieces of rubbish in the afternoon. How many pieces of rubbish did Sharon pick up that day? 15

I

Pat recycled 4 brown boxes and 7 blue boxes. How many boxes did Pat recycle altogether? 11

B

Ben found 10 pieces of rubbish on Monday and another 9 pieces of rubbish on Tuesday. How many pieces of rubbish did Ben find over both days? 19

L

Pete carried 3 bags of trash and Kate carried 2 bags of trash. How many bags of trash did Pete and Kate carry? 5

U

Ned watered 2 apple trees and 1 pear tree. How many trees did Ned water altogether? 3

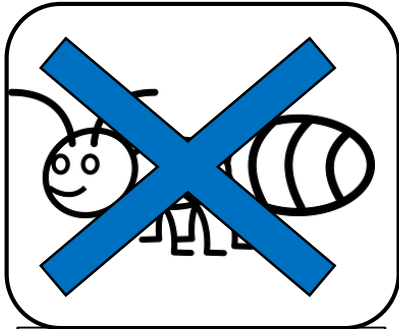
N

Cross off the remaining suspect that does not have a stinger. This should leave one suspect remaining, and that is who the Litterbug is!



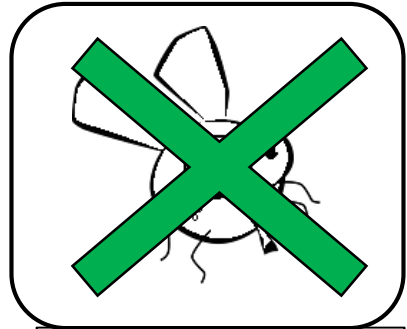
# ELIMINATION GUIDE

## Arnie the Ant



**Color:** Brown  
**Moves:** Slow  
**Can Fly?** NO

## Stitch the Fly

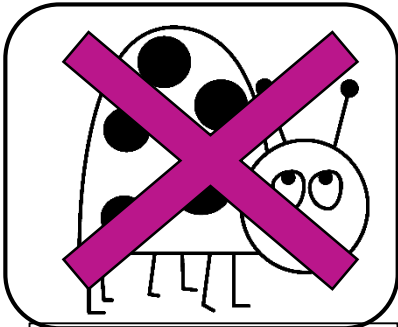


**Color:** Yellow  
**Moves:** Slow  
**Can Fly?** YES

On the answer sheets you will find a comment about who needs to be crossed off. Please refer to the color of the font and the color of the cross on the suspect profile to show which suspect has been crossed off from that clue.

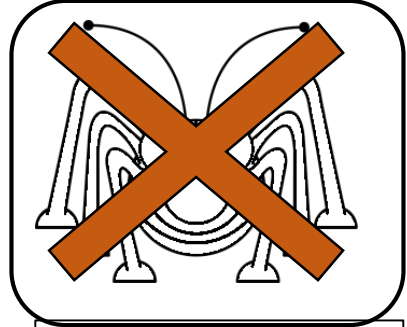
**MYSTERY ANSWER:**  
**Buzz the Bee**

## Luna the Ladybug



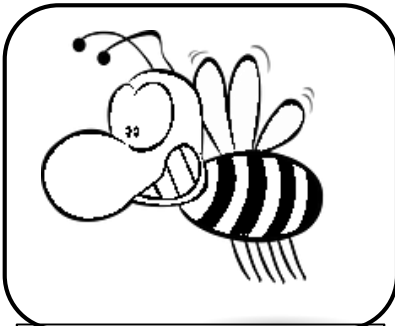
**Color:** Red  
**Moves:** Fast  
**Can Fly?** YES

## Hop the Grasshopper



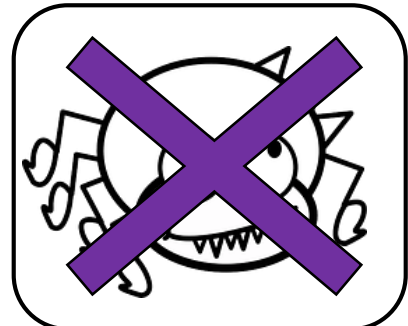
**Color:** Green  
**Moves:** Fast  
**Can Fly?** NO

## Buzz the Bee



**Color:** Yellow  
**Moves:** Fast  
**Can Fly?** YES

## Itsy the Spider



**Color:** Brown  
**Moves:** Fast  
**Can Fly?** NO

# Super Detective Work!



Awarded To:

\_\_\_\_\_



For solving the Math Mystery:

## Case of The Litterbug



# Super Detective Work!



Awarded To:

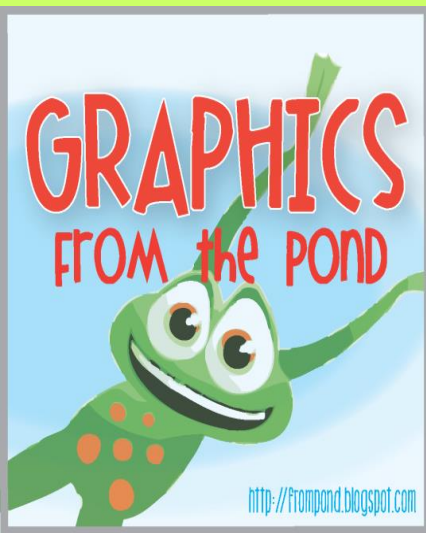
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For solving the Math Mystery:

## Case of The Litterbug





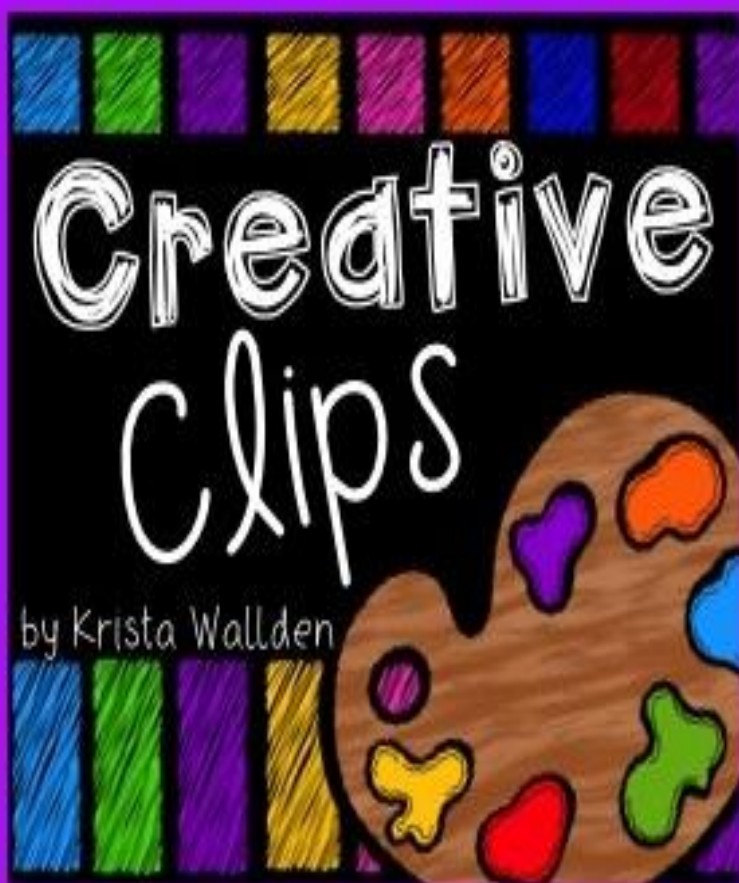
# Graphics & Fonts By:



Fonts by The Learning Tree

Vladimir Zuñiga  
Foca.tk

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# Thank You!