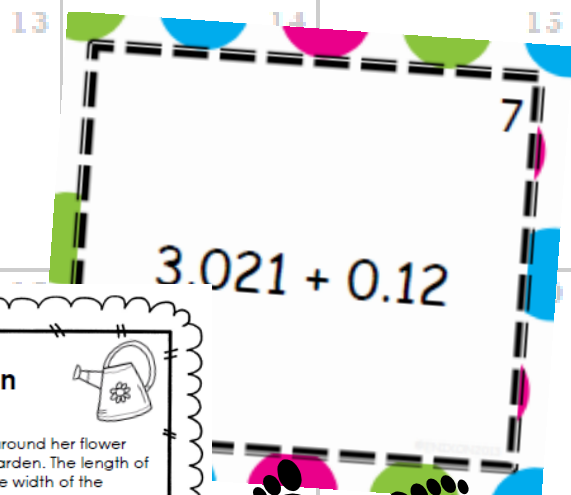
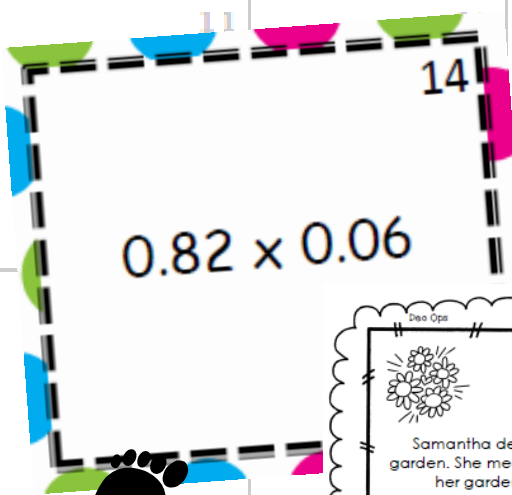


# Footloose

# Footloose!

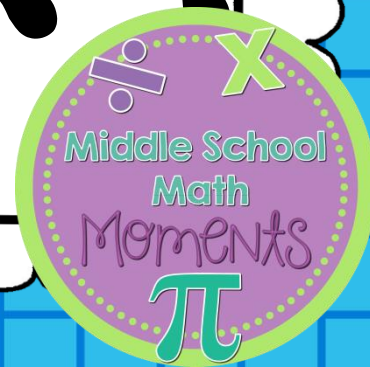
## and Problem Solving Decimal Operations



**Flower Garden**

Samantha decided to build a fence around her flower garden. She measured the sides of her garden. The length of her garden was 5.75 meters and the width of the garden was 4.45 meters.

- What is the total length of fencing that Samantha must buy?
- The fencing Samantha's going to buy comes in sections that are 3 meters long. How many sections will Samantha need to buy?
- How much fencing will Samantha have left over?
- What is the area of Samantha's garden?



# Footloose!



## Common Core State Standards:

**5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

**6.NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation

## Directions:

1. Copy enough Footloose grids for each student in the class, and distribute one grid to each student.
2. Give each student one of the 30 cards (it is best if these cards are laminated). If there are extra cards, they can be placed around the room for students to pick up as needed. If there are more than 30 students, students may share cards as they work.
3. Students should answer the question on their first card by writing the answer on their grid (not on the card), in the box with the number that corresponds to the number in the right hand corner of the question card.
4. After recording the answer, students should place the card in a "central location," like a chalk ledge or a table, and then take a new card to complete. (An alternate way to play - display the cards around the room and students may go to the cards in the order they choose.)
5. Students should continue to answer the questions one card at a time, returning each card as they finish, until they have filled the entire grid.
6. The "winner" of the game is the student who answers the most questions correctly!

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# Footloose

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

1

$$20 - 9.44$$

©MSMM2013

2

$$22.2 + 1.93$$

©MSMM2013

3

$$19.7 - 7$$

©MSMM2013

4

$$52.13 + 8.22$$

©MSMM2013

5

$$21.7 \times 5.5$$

©MSMM2013

6

$$17.22 \times 0.25$$

©MSMM2013

7

$$3.021 + 0.12$$

©MSMM2013

8

$$7 + 0.0223$$

©MSMM2013

9

$$7 - 6.2$$

©MSMM2013

10

$$3.21 - 2.432$$

©MSMM2013

11

$$30 - 6.65$$

©MSMM2013

12

$$30.49 + 4.7$$

©MSMM2013

13

$$0.4 \times 23.6$$

©MSMM2013

14

$$0.82 \times 0.06$$

©MSMM2013

15

$$3.2 \times 0.001$$

©MSMM2013

16

$$27 \div 6$$

©MSMM2013

17

$$0.104 + 8$$

©MSMM2013

18

$$9.92 \div 8$$

©MSMM2013

19

$$6.2 \times 0.06$$

©MSMM2013

20

$$2.035 \div 5$$

©MSMM2013



21

$$3.534 \div 6$$

©MSMM2013

22

$$10.69 - 7$$

©MSMM2013

23

$$2.59 \div 0.7$$

©MSMM2013

24

$$5.49 \div 0.9$$

©MSMM2013

25

$$6.89 \div 1.3$$

©MSMM2013

26

$$69.09 \div 7$$

©MSMM2013

27

$$2.634 + 7.42$$

©MSMM2013

28

$$0.264 - 0.24$$

©MSMM2013

29

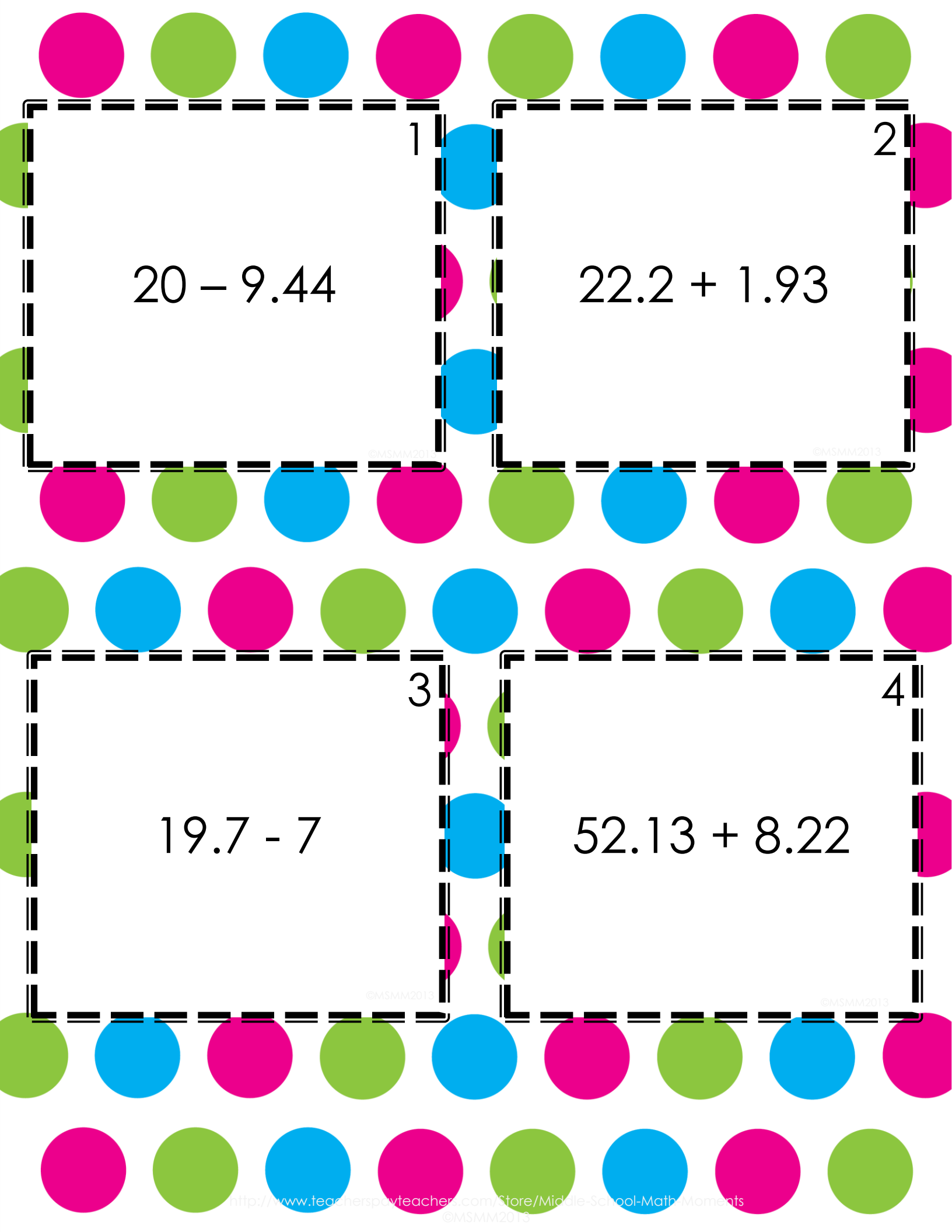
$$12 \times 0.8$$

©MSMM2013

30

$$0.2 \times 25$$

©MSMM2013



1

$$20 - 9.44$$

©MSMM2013

2

$$22.2 + 1.93$$

©MSMM2013

3

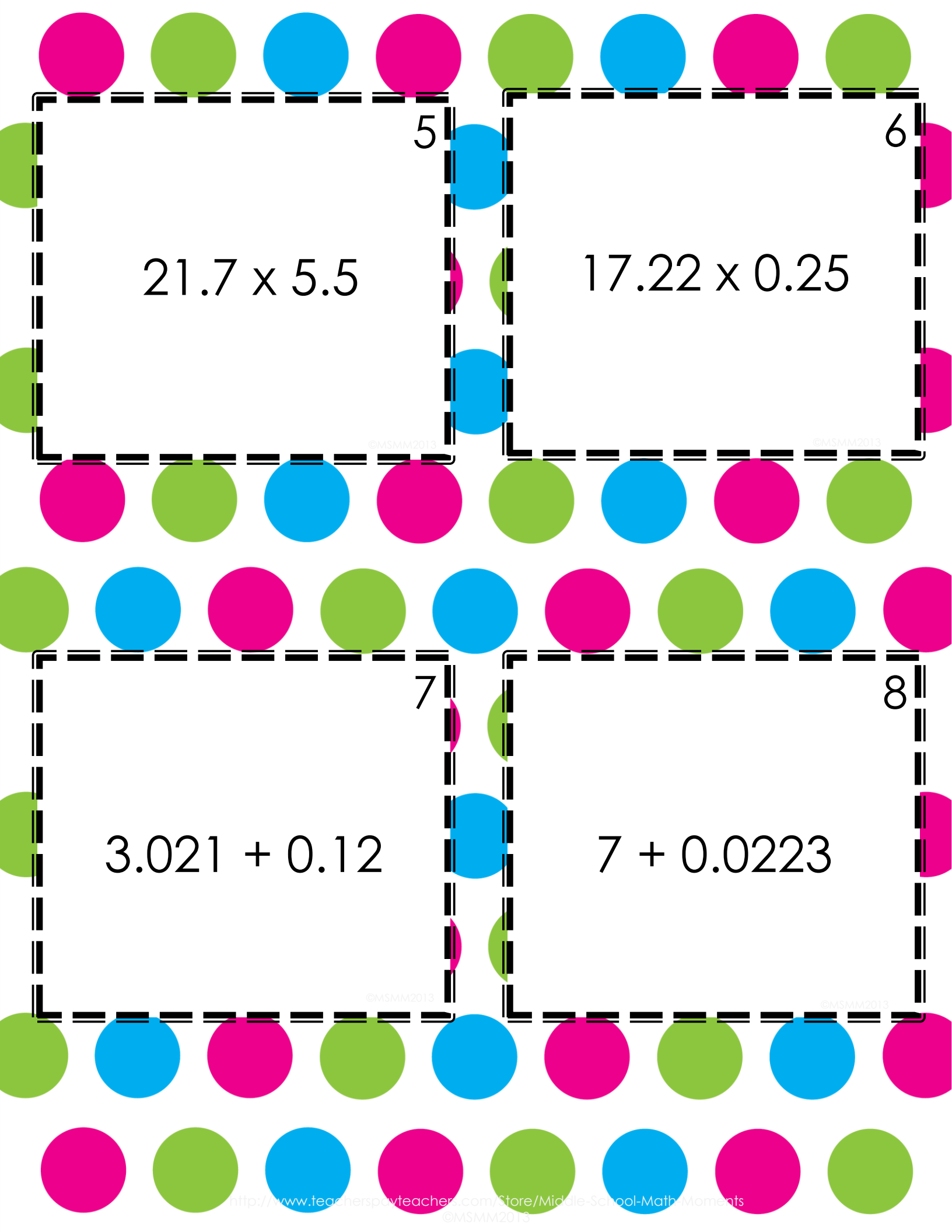
$$19.7 - 7$$

©MSMM2013

4

$$52.13 + 8.22$$

©MSMM2013



5

$21.7 \times 5.5$

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6

$17.22 \times 0.25$

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7

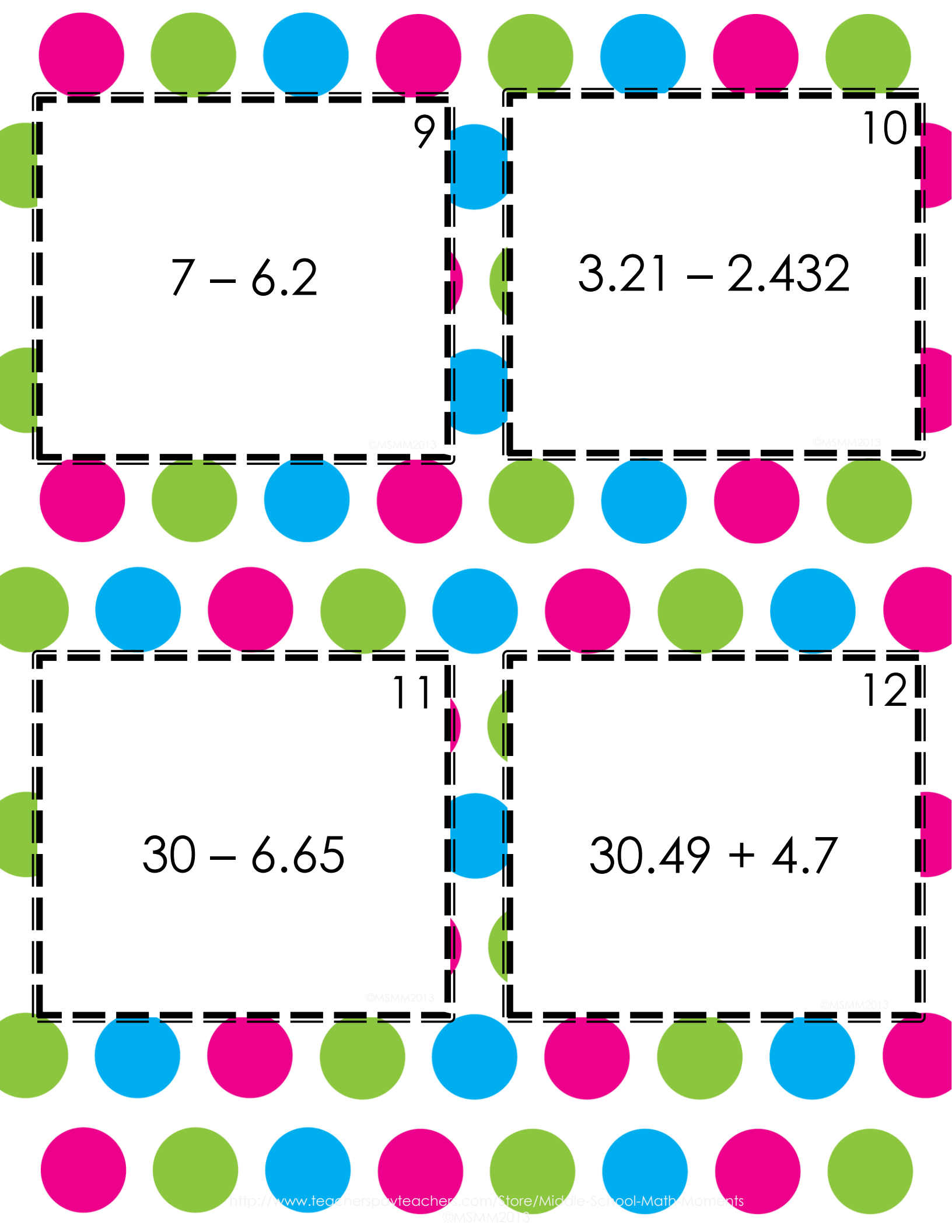
$3.021 + 0.12$

©MSMM2013

8

$7 + 0.0223$

©MSMM2013



9

$$7 - 6.2$$

©MSMM2013

10

$$3.21 - 2.432$$

©MSMM2013

11

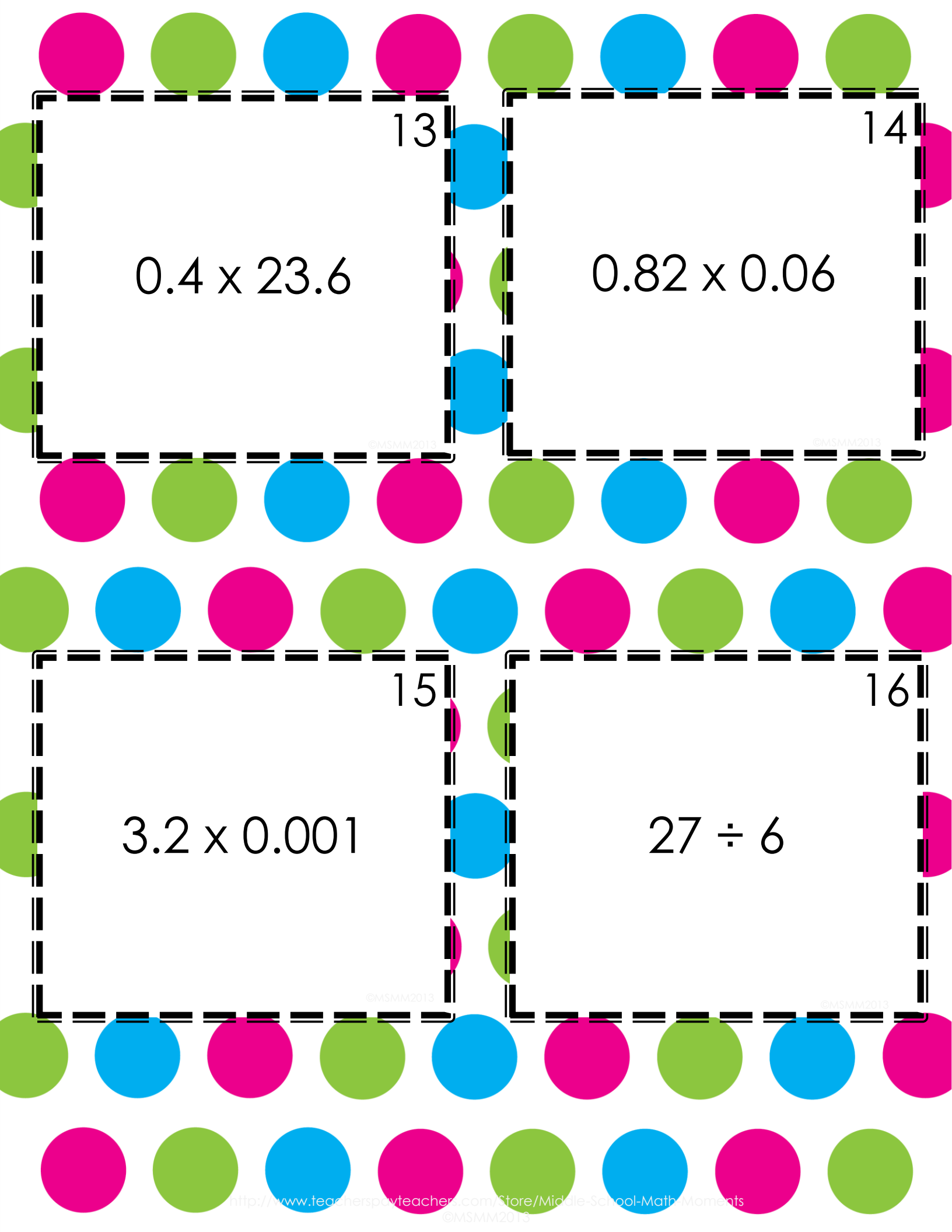
$$30 - 6.65$$

©MSMM2013

12

$$30.49 + 4.7$$

©MSMM2013



13

$0.4 \times 23.6$

©MSMM2013

14

$0.82 \times 0.06$

©MSMM2013

15

$3.2 \times 0.001$

©MSMM2013

16

$27 \div 6$

©MSMM2013



17

$$0.104 + 8$$

©MSMM2013

18

$$9.92 \div 8$$

©MSMM2013

19

$$6.2 \times 0.06$$

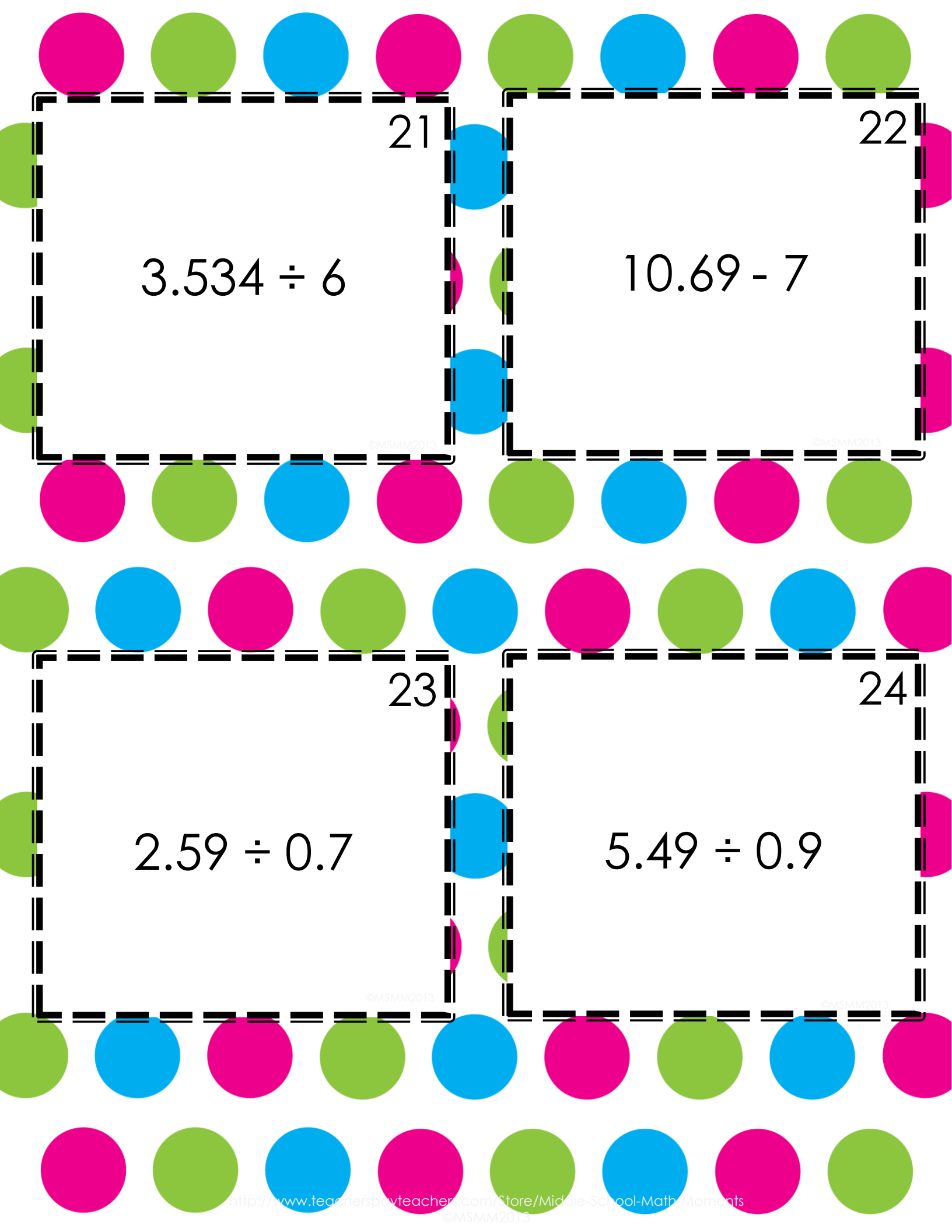
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20

$$2.035 \div 5$$

©MSMM2013





21

$$3.534 \div 6$$

©MSMM2013

22

$$10.69 - 7$$

©MSMM2013

23

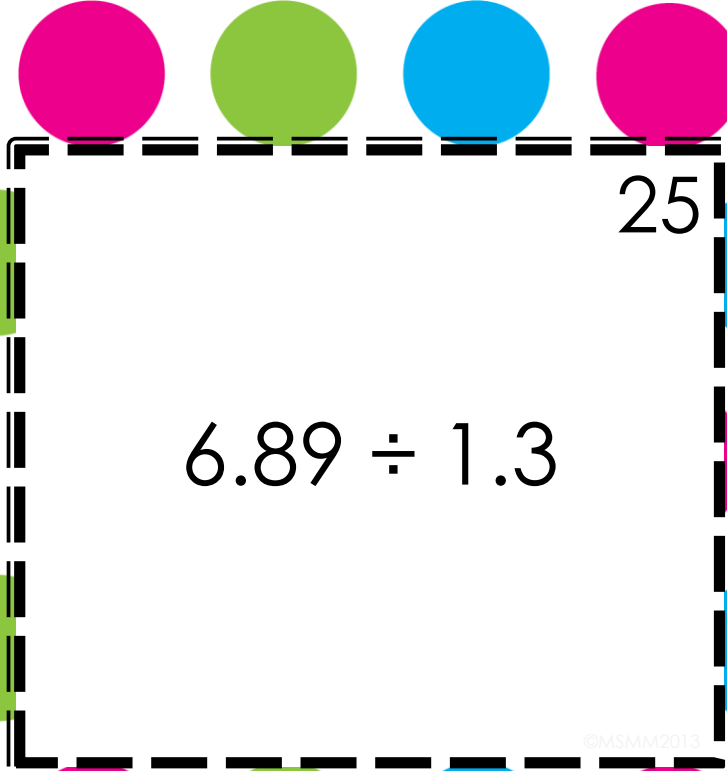
$$2.59 \div 0.7$$

©MSMM2013

24

$$5.49 \div 0.9$$

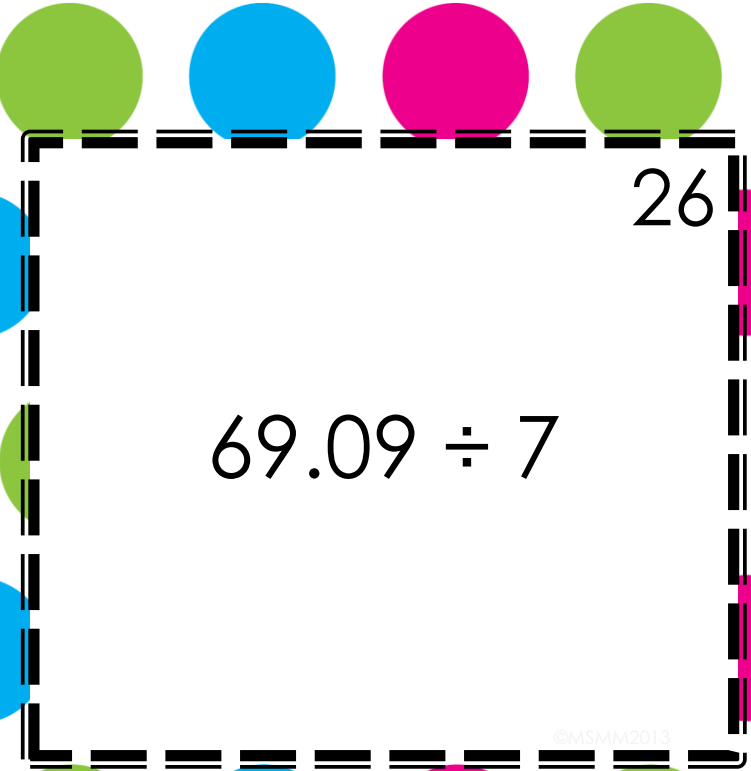
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25

$$6.89 \div 1.3$$

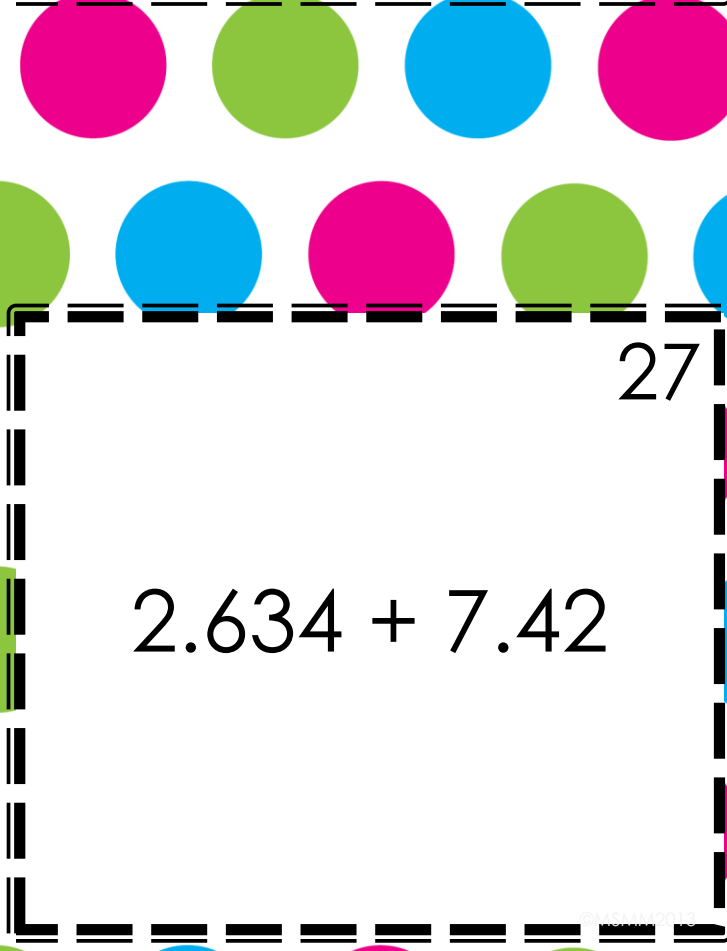
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26

$$69.09 \div 7$$

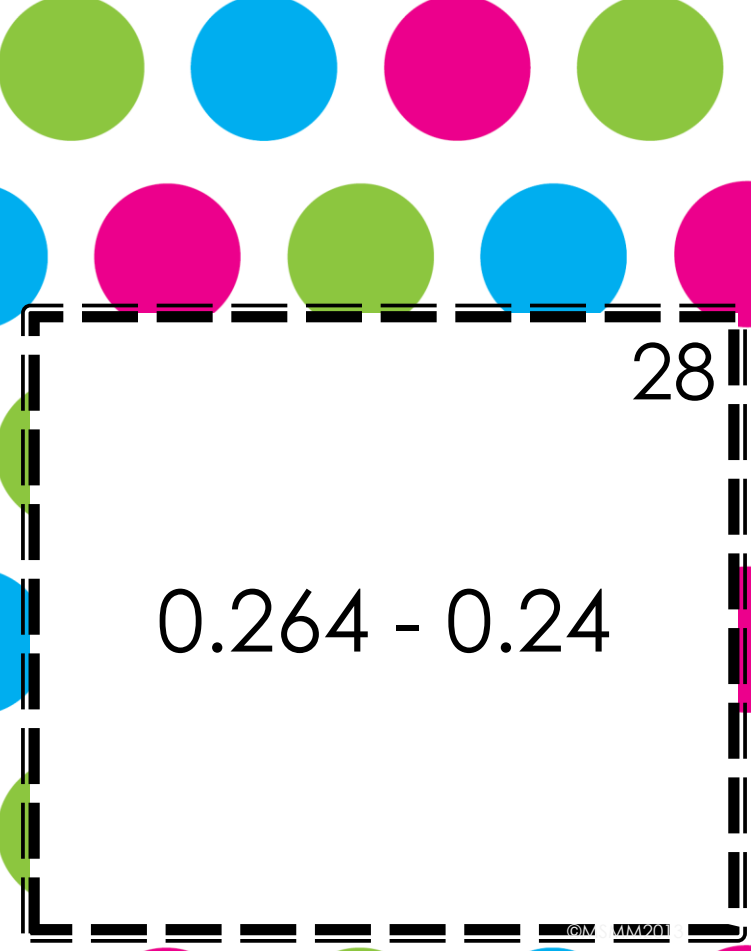
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27

$$2.634 + 7.42$$

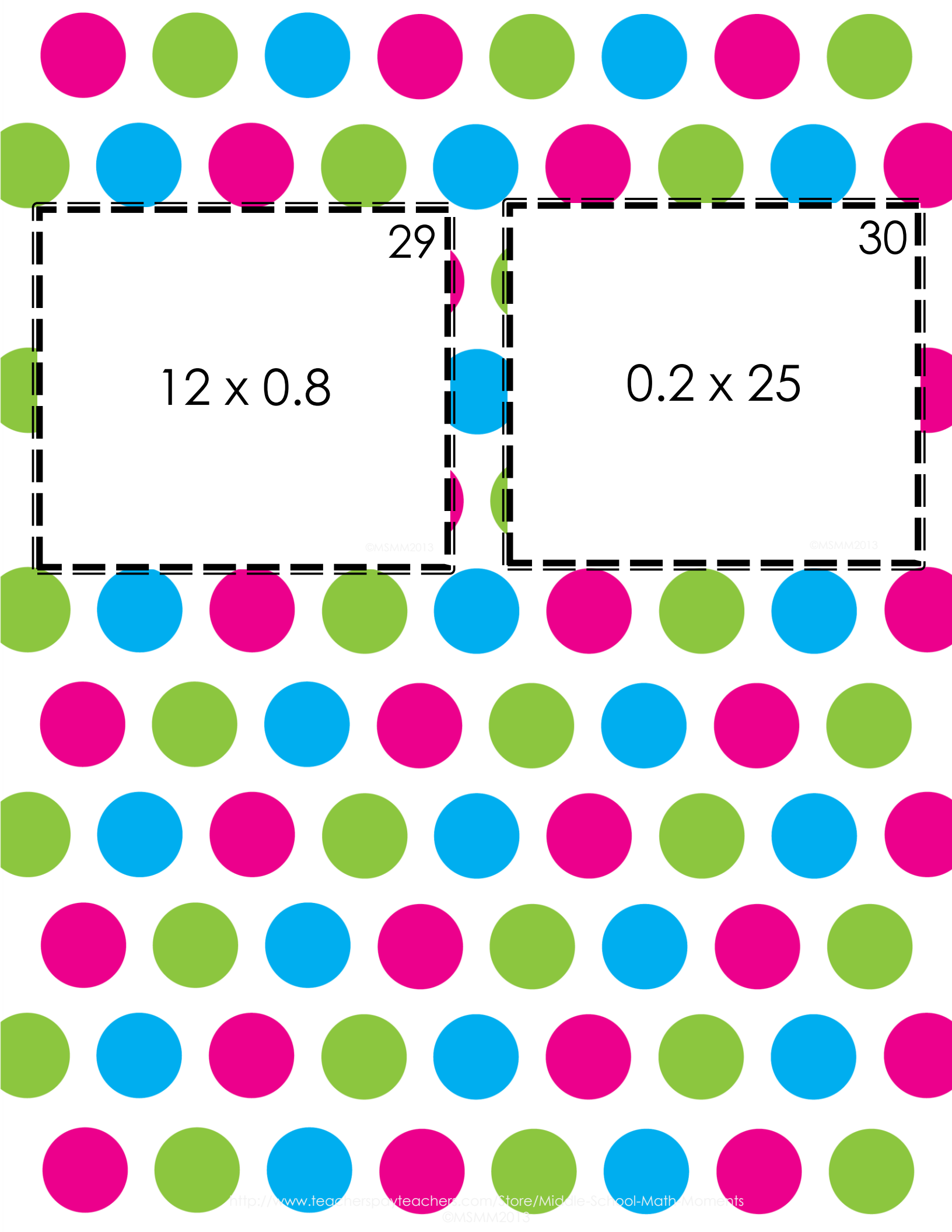
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28

$$0.264 - 0.24$$

©MSMM2013



12 x 0.8

29

0.2 x 25

30

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# Footloose

## Answer Key

<b>1</b> $20 - 9.44 =$ <b>10.56</b>	<b>2</b> $22.2 + 1.93 =$ <b>24.13</b>	<b>3</b> $19.7 - 7 =$ <b>12.7</b>	<b>4</b> $52.13 + 8.22 =$ <b>60.35</b>	<b>5</b> $21.7 \times 5.5 =$ <b>119.35</b>
<b>6</b> $17.22 \times 0.25 =$ <b>4.305</b>	<b>7</b> $3.021 + 0.12 =$ <b>3.141</b>	<b>8</b> $7 + 0.0223 =$ <b>7.0223</b>	<b>9</b> $7 - 6.2 =$ <b>0.8</b>	<b>10</b> $3.21 - 2.432 =$ <b>0.778</b>
<b>11</b> $30 - 6.65 =$ <b>23.35</b>	<b>12</b> $30.49 + 4.7 =$ <b>35.19</b>	<b>13</b> $0.4 \times 23.6 =$ <b>9.44</b>	<b>14</b> $0.82 \times 0.06 =$ <b>0.0492</b>	<b>15</b> $3.2 \times 0.001$ <b>0.0032</b>
<b>16</b> $27 \div 6$ <b>4.5</b>	<b>17</b> $0.104 + 8$ <b>8.104</b>	<b>18</b> $9.92 \div 8$ <b>1.24</b>	<b>19</b> $6.2 \times .06$ <b>0.372</b>	<b>20</b> $2.035 \div 5$ <b>0.407</b>
<b>21</b> $3.534 \div 6$ <b>0.589</b>	<b>22</b> $10.69 - 7$ <b>3.69</b>	<b>23</b> $2.59 \div 0.7$ <b>3.7</b>	<b>24</b> $5.49 \div 0.9$ <b>6.1</b>	<b>25</b> $6.89 \div 1.3$ <b>5.3</b>
<b>26</b> $69.09 \div 7$ <b>9.87</b>	<b>27</b> $2.634 + 7.42$ <b>10.054</b>	<b>28</b> $0.264 - 0.24$ <b>0.024</b>	<b>29</b> $12 \times 0.8$ <b>9.6</b>	<b>30</b> $0.2 \times 25$ <b>5.0</b>

# Problem Solving

The following pages have six different problem solving situations, and each situation has 3 - 4 questions to be answered. The questions incorporate adding, subtracting, multiplying, and dividing decimals.

I often use this type of problem solving with cooperative groups, to provide opportunities for the math conversations that are so helpful to students' understanding and development of math concepts. In their groups, students work out the answers on their own papers, and after discussion and agreement, write the group's final answers on the answer sheets provided. One form of answer sheet goes with the situations that have three questions and the other is for those with four.

I have used these for a portion of the class period, for several days during a week, with each group solving one different problem set each day.

The problem solving is also convenient for use in centers, during which students could work on the problems individually.

I have found it helpful to laminate the problem solving pages for reuse. 😊

Answer keys are included. The answer keys are in detail, showing the work for each problem, so students could self-correct if you choose.

# Answer Sheet

**Directions:** This answer sheet is the final copy of work and answers. After solving on separate paper, copy all work and answers onto this sheet. Make sure you list the work and answers under the correct letter. Remember to label your answers!

**Part A:**

**Part B:**

**Part C:**

**Part D:**

# Answer Sheet

**Directions:** This answer sheet is the final copy of work and answers. After solving on separate paper, copy all work and answers onto this sheet. Make sure you list the work and answers under the correct letter. Remember to label your answers!

**Part A:**

**Part B:**

**Part C:**



# Shopping

Simon went to his favorite clothing store with \$105.50. He bought 5 t-shirts and 2 caps. The shirts each cost \$14.94, and the caps each cost \$10.78.

- A. What was Simon's total cost?
- B. How much money did Simon have left?
- C. Simon had to share his change equally with his 2 brothers. How much money did they each get?



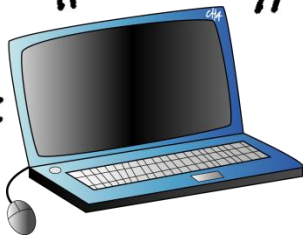




## Lunch Time

Gina and her 4 friends went out for lunch. They ordered 3 steak sandwiches (to share) for \$8.95 each, and each girl ordered french fries for \$0.99 each. They each ordered a soda for \$1.75.

- A. How much did the friends spend altogether?
- B. If the friends split the cost of the bill evenly, how much did each friend pay?
- C. Gina had started out with \$20. How much did she have left after she paid for her lunch?



## Planning Purchases

Frank wants to buy his own laptop computer. The one he plans to buy costs \$668.85. Every week, Frank earns \$85.75 at his job at the grocery store.

- A. If Frank saves all of his money, how many full weeks will he need to work to have enough money for the laptop?
- B. If Frank wants to buy a pair of headphones for \$11.39 and a pack of pens for \$6.49, in addition to the laptop, will he have enough money?
- C. How much money will Frank have left after his purchases, OR how much more does he need to buy the headphones and pens?



## Marathon Running



Julia is training to run a marathon, which is 26.2 miles. Last week, she ran 12.8 miles a day on Monday, Wednesday, and Friday. On Tuesday and Saturday she ran 5.6 miles each day, and on Sunday she ran 23.3 miles.

On Thursday, she had a day off!

- A. How many miles did Julia run in all?
  
  
  
  
  
  
  
  
  
  
- B. If Julia had skipped her Monday and Tuesday runs, how many miles would she have run?
  
  
  
  
  
  
  
  
  
  
- C. If Julia follows her training plan for 3 weeks, how many miles will she run in those 3 weeks?
  
  
  
  
  
  
  
  
  
  
- D. The week before the marathon, Julia will cut her weekly mileage so that she only runs *one-third* as many miles as her total from part A. How many miles will she run?





# Flower Garden



Samantha decided to put up a fence around her flower garden, so she measured the dimensions of her garden. The length of her garden was 5.75 meters and the width of the garden was 4.45 meters.

- A. What is the total length of fencing that Samantha must buy?
  
  
  
  
  
  
  
  
  
  
- B. The fencing Samantha's going to buy comes in sections that are 2.5 meters long. How many sections will Samantha need to buy?
  
  
  
  
  
  
  
  
  
  
- C. How many meters of fencing will Samantha have left over?
  
  
  
  
  
  
  
  
  
  
- D. What is the area of Samantha's garden?





# Party Planning!

Reggie's mom has given him a budget of \$50 to buy food for a party he is having. Reggie is planning to have 5 friends at his party, and the party will last for 4 hours. He would like to have soda, chips, pretzels, ice cream, popcorn, and candy. He also wants to have a few healthy snacks like carrots and fruit. He needs to figure out which items he can actually purchase for the party.

Reggie found some items on sale, and so he worked with these prices:

2- liter bottle of soda:	\$0.99
family size bag of chips:	\$3.25
family size bag of pretzels:	\$2.99
family size bag of popcorn:	\$3.49
family size bag of candy:	\$4.25
½ gallon container of ice cream:	\$3.99
bag of carrots (large):	\$3.99
bag of carrots (small):	\$2.19
fruit tray (large - feeds 12):	\$9.99
fruit tray (small - feeds 6):	\$6.99

## Complete the following:

- 1) Find three different combinations of items that Reggie can purchase for his party (try to get close to the \$50 limit).
- 2) Include at least 4 different items from the price list.
- 3) List the items you have chosen for each combination.
- 4) Write the total cost for each combination.  
Remember, he can't spend more than \$50!

Combination 1

Combination 2

Combination 3

## Answer Key-Shopping

Simon went to his favorite clothing store with \$105.50. He bought 5 t-shirts and 2 caps. The shirts each cost \$14.94, and the caps each cost \$10.78.

A. What was Simon's total cost?

$$5 \times \$14.94 = \$74.70$$

$$2 \times \$10.78 = \$21.56$$

$$\$74.70 + \$21.56 = \$96.26$$

**Simon's total cost was \$96.26**

B. How much money did Simon have left?

$$\$105.50 - \$96.26 = \$9.24$$

**Simon had \$9.24 left.**

C. Simon had to share his change equally with his 2 brothers.  
How much money did they each get?

$$\$9.24 \div 3 = \$3.08$$

**Each brother received \$3.08.**



## Answer Key – Lunch Time

Gina and her 4 friends went out for lunch. They ordered 3 steak sandwiches (to share) for \$8.95 each, and each girl ordered french fries for \$0.99 each. They each ordered a soda for \$1.75.

A. How much did the friends spend altogether?

$$\$8.95 \times 3 = \$26.85$$

$$\$0.99 \times 5 = \$4.95$$

$$\$1.75 \times 5 = \$8.75$$

$$\$26.85 + \$4.95 + \$8.75 = \$40.55$$

**The friends spent \$40.55 altogether.**

B. If the friends split the cost of the bill evenly, how much did each friend pay?

$$\$40.55 \div 5 = \$8.11$$

**Each friend paid \$8.11.**

C. Gina had started out with \$20. How much did she have left after she paid for her lunch?

$$\$20 - \$8.11 = \$11.89$$

**Cathy has \$11.89 left.**

## Answer Key – Planning Purchases

Frank wants to buy his own laptop computer. The one he plans to buy costs \$668.85. Every week, Frank earns \$85.75 at his job at the grocery store.

- A. If Frank saves all of his money, how many full weeks will he need to work to have enough money for the laptop?

$$\$668.85 \div \$85.75 = 7.8$$

**Frank will need to work for 8 full weeks.**

- B. If Frank wants to buy a pair of headphones for \$11.39 and a pack of pens for \$6.49, in addition to the laptop, will he have enough money?

$$\text{\$\$ Frank will have: } 8 \text{ weeks} \times \$85.75 = \$686$$

$$\$686 - \$668.85 = \$17.15 \text{ left}$$

$$\$11.39 + \$6.49 = \$17.88 \text{ for headphones and pens}$$

**No, Frank will not have enough money for headphones and pens.**

- C. How much money will Frank have left after his purchases, OR how much more does he need to buy the headphones and pens?

$$\$17.88 - \$17.15 = \$0.73$$

**Frank needs \$0.73.**



## Answer Key – Marathon Running

Julia is training to run a marathon, which is 26.2 miles. Last week, she ran 12.8 miles a day on Monday, Wednesday, and Friday. On Tuesday and Saturday she ran 5.6 miles each day, and on Sunday she ran 23.3 miles. On Thursday, she took a day off!

A. How many miles did Julia run in all?

$$12.8 \times 3 = 38.4$$

$$5.6 \times 2 = 11.2$$

$$38.4 + 11.2 + 23.3 = 72.9$$

**Julia ran 72.9 miles in all.**

B. If Julia had skipped her Monday and Tuesday runs, how many miles would she have run?

$$12.8 + 5.6 = 18.4$$

$$72.9 - 18.4 = 54.5$$

**If she skipped Monday and Tuesday, Julia would have run 54.5 miles.**

C. If Julia follows her training plan for 3 weeks, how many miles will she run in those 3 weeks?

$$72.9 \times 3 = 218.7$$

**Julia will run 218.7 miles.**

D. The week before the marathon, Julia will cut her weekly mileage so that she only runs *one-third* as many miles as her total from part A. How many miles will she run?

$$72.9 \div 3 = 24.3 \text{ miles}$$

**Julia will run 24.3 miles.**

## Answer Key – Flower Garden

Samantha decided to put up a fence around her flower garden, so she measured the dimensions of her garden. The length of her garden was 5.75 meters and the width of the garden was 4.45 meters.

A. What is the total length of fencing that Samantha must buy?

$$5.75 \times 2 = 11.5$$

$$4.45 \times 2 = 8.9$$

$$11.5 + 8.9 = 20.4$$

**Samantha needs 20.4 meters of fencing.**

B. The fencing Samantha's going to buy comes in sections that are 2.5 meters long. How many sections will Samantha need to buy?

$$20.4 \div 2.5 = 8.16$$

**Samantha needs to buy 9 sections.**

C. How many meters of fencing will Samantha have left over?

$$9 \text{ sections} \times 2.5 \text{ meters/sections} = 22.5 \text{ meters}$$

$$22.5 - 20.4 = 2.1 \text{ meters}$$

**Samantha will have 2.1 meters left.**

D. What is the area of Samantha's garden?

$$A = l \times w$$

$$A = 5.75 \times 4.45 = 25.5875$$

**The garden is 25.5875 square meters.**



# Party Planning!

Reggie's mom has given him a budget of \$50 to buy food for a party he is having. Reggie is planning to have 5 friends at his party, and the party will last for 4 hours. He would like to have soda, chips, pretzels, ice cream, popcorn, and candy. He also wants to have a few healthy snacks like carrots and fruit. He needs to figure out which items he can actually purchase for the party.

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- 4) Write the total cost for each combination.  
Remember, he can't spend more than \$50!

Combination 1

Combination 2

Combination 3

Answers will vary.

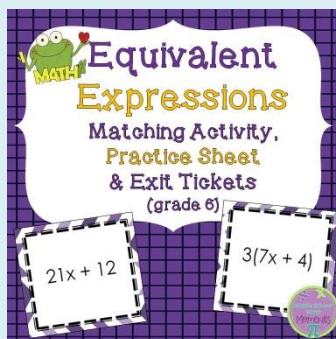
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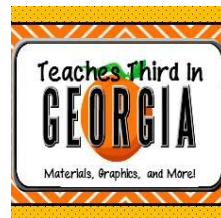
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