5

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Mathematics

Quarter 1 – Module 10:
Fun with Multiplying Fractions Using Models

ALTERNATIVE DELIVERY MODE
ADM

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Mathematics – Grade 5
Alternative Delivery Mode
Quarter 1 – Module 10: Fun with Multiplying Fractions Using Models
First Edition, 2020

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5

Mathematics

Quarter 1 – Module 10:
Fun with Multiplying Fractions Using Models

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Introductory Message

For the Facilitator:

Welcome to the Math Grade 5 Alternative Delivery Mode (ADM) Module 10 on Fun with Multiplying Fraction Using Models!

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners to meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

Notes to the Teacher

This contains helpful tips or strategies that will help you in guiding the learners.

As a Facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the Learner:

Welcome to the Mathematics 5 Alternative Delivery Mode (ADM) Module 10 on Fun with Multiplying Fraction Using Models!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

What I Need to Know	This will give you an idea of the skills or competencies you are expected to learn in the module.
What I Know	This part is composed of a 10-item activity to check what you already know about the lesson to take. If you get all the answers correct (100%) you may decide to skip this module.
What's In	This is a brief drill or review to help you link the current lesson with the previous one.
What's New	In this portion, the new lesson will be introduced to you in various ways: a story, a song, a poem, a problem opener, an activity, or a situation.
What is It	This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.
What's More	This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.
What I Have Learned	This includes questions or fill in the blank sentence/paragraph to process what you have learned from the lesson.
What I Can Do	This section provides an activity that will help you transfer your new knowledge or skill in real-life situations or concerns.
Assessment	This is another 10-item task that aims to evaluate your level of mastery in achieving the learning competency.

Additional Activities	In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned.
Answer Key	This contains answers to all activities in the module.

At the end of this module you will also find:

References	This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instructions carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain a deep understanding of the relevant competencies. You can do it!

What I Need to Know

Hi Mathletes!

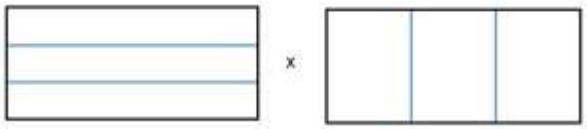
In this module, you are going to visualize the multiplication of fractions using models. You may use a piece of paper and other materials for the purpose of illustrating fractions. Always remember to shade fractions in cross directions and also in paper folding.

What I Know

Do you still remember how to find the product of fractions? Answer the test below!

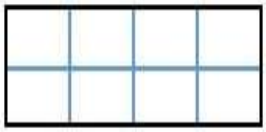
Directions: Give the product of the following fractions. Choose the letter of the correct answer.

1) Which illustration below is the product of the two illustrations?



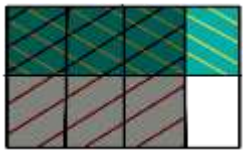
A.

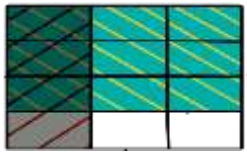
B.

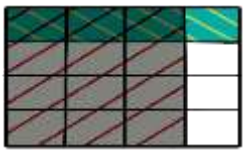
C. 

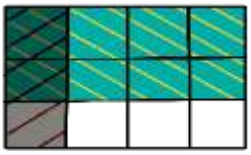
D.

2) Which figure below shows the product of $\frac{1}{3}$ x $\frac{3}{4}$?

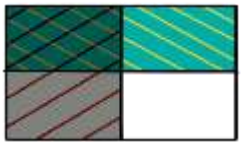
A. 

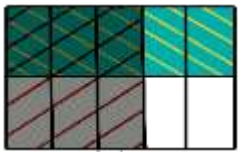
B. 

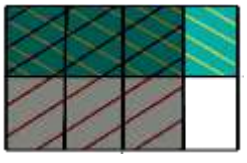
C. 

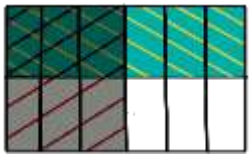
D. 

3) Which illustration below shows $\frac{3}{5}$ of $\frac{1}{2}$?

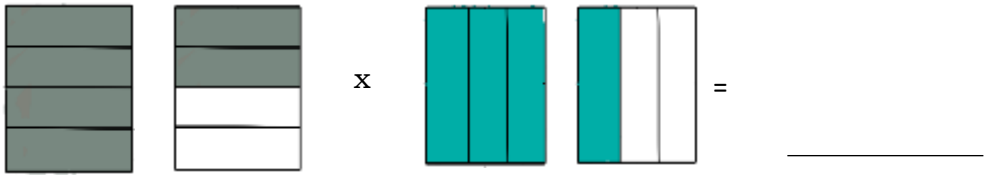
A. 

B. 

C. 

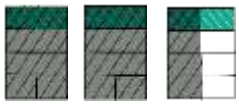
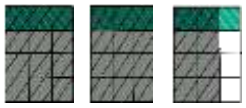
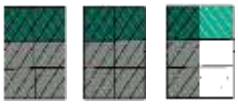
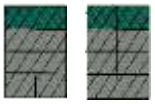
D. 

4) Which is the correct number sentence for the illustrations below?

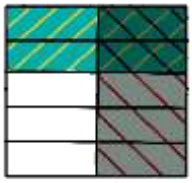
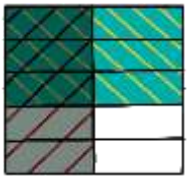
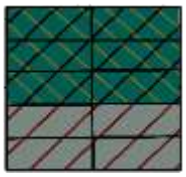


A. $1\frac{1}{2} \times 1\frac{2}{3}$ B. $1\frac{2}{5} \times 1\frac{1}{4}$ C. $1\frac{2}{4} \times 1\frac{1}{3}$ D. $4\frac{2}{4} \times 3\frac{1}{3}$

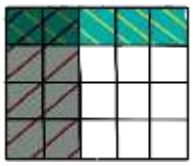
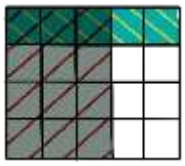
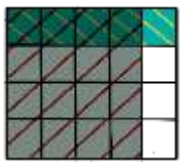
5) Which illustration shows $\frac{1}{4}$ of $2\frac{2}{3}$?

A.  B.  C.  D. 

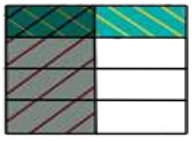
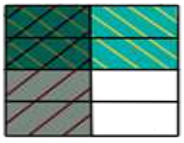
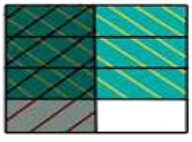
6) $\frac{1}{2}$ of $\frac{2}{5}$ can be represented as:

A. B.  C.  D. 

7) Which of the following models shows $\frac{1}{4}$ of $\frac{2}{5}$?

A.  B. C.  D. 

8) What is $\frac{1}{2}$ of $\frac{3}{4}$?

A.  B.  C.  D.

9) Which figure below is the $\frac{1}{2}$ of $\frac{2}{3}$?

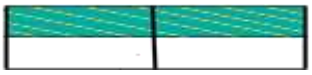
A. C.

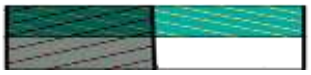
B. D.

10) What illustration below shows the $\frac{1}{2}$ of $\frac{1}{2}$?

A.

C.

B. 

D. 

Lesson 1 Visualizing Multiplication of Fractions Using Models

Note that multiplying fractions is frequently expressed using the word "of." For example, to find one-fifth of 10 pieces of candy, you will multiply $\frac{1}{5}$ by 10, which equals 2. Study the sample problems below to see how to apply the rules for multiplying fractions.

What's In

In the previous module, you have learned how to reduce fractions in their lowest terms. Recall the said lesson by doing the exercise below.

Directions: Reduce the following fractions into their lowest terms.

1) $\frac{4}{18}$

2) $\frac{12}{20}$

3) $\frac{25}{40}$

4) $\frac{9}{15}$

5) $\frac{10}{100}$

What's New

Are you ready for the next? Let us read and analyze the problem below.

Father owns a $\frac{3}{4}$ hectare piece of land. He planted $\frac{1}{3}$ of it with sweet corn. What part of his land was planted with sweet corn?

How big is Father's land?

What part of his land is planted with sweet corn?

What Is It

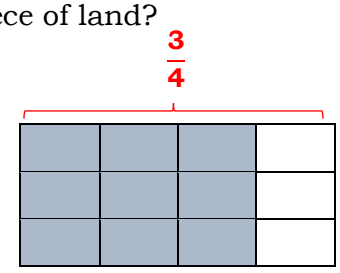
How will you illustrate $\frac{1}{3}$ of $\frac{3}{4}$?
How will you solve the problem?

Father owns a $\frac{3}{4}$ hectare piece of land. He planted $\frac{1}{3}$ of it with sweet corn. What part of his land was planted with sweet corn?

Let us imagine that this whole piece of paper represents one hectare of land.

If this is 1 hectare, how will you represent the $\frac{3}{4}$ hectare piece of land?

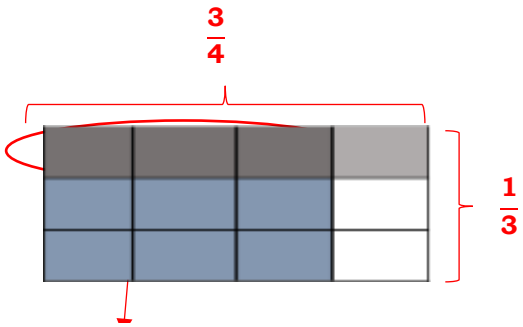
(Fold the paper into 4 equal parts and shade $\frac{3}{4}$.)



What about $\frac{1}{3}$ of $\frac{3}{4}$? How will you represent it?

(Fold again the paper into 3 crossing the lines as shown)

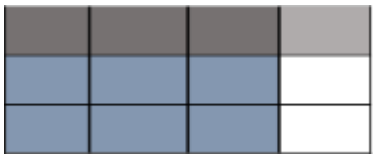
What do you think is represented by the double-shaded part? ($\frac{1}{3}$ *of* $\frac{3}{4}$)



What fraction names the double-shaded part? ($\frac{3}{12}$)

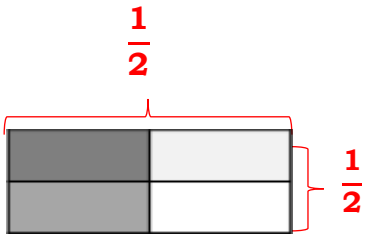
What is $\frac{1}{3}$ of $\frac{3}{4}$? ($\frac{3}{12}$)

So, $\frac{1}{3} \times \frac{3}{4} = \frac{3}{12}$ **or** $\frac{1}{4}$



Consider the following examples:

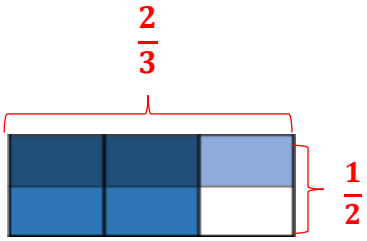
1) $\frac{1}{2}$ **of** $\frac{1}{2} = \frac{1}{2} \times \frac{1}{2} = ?$



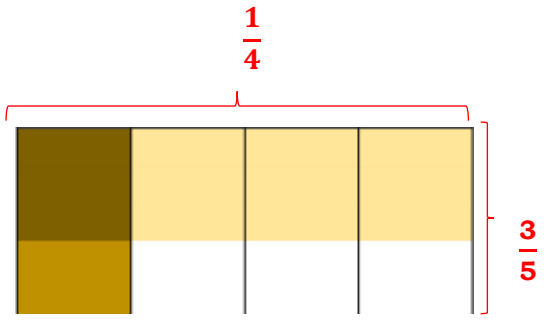
How will you name the double-shaded part? ($\frac{1}{4}$)

Therefore, $\frac{1}{2}$ of $\frac{1}{2}$ is $\frac{1}{4}$.

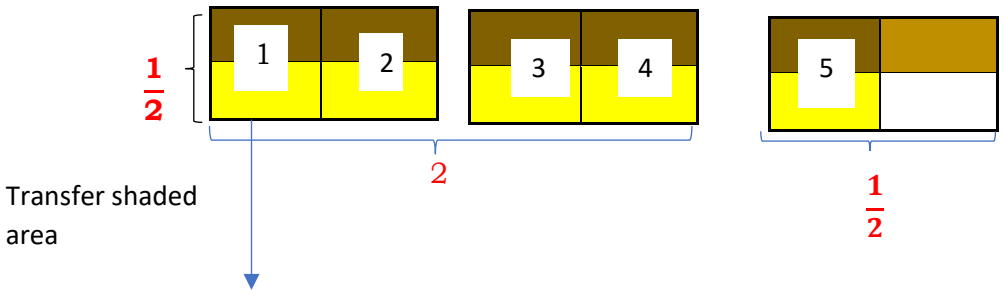
2) $\frac{1}{2}$ of $\frac{2}{3} = \frac{1}{2} \times \frac{2}{3} = ?$



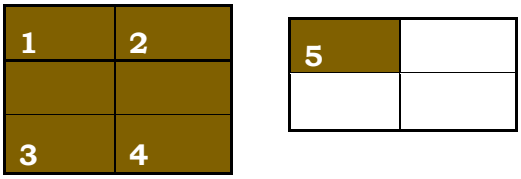
3) $\frac{1}{4}$ of $\frac{3}{5} = \frac{1}{4} \times \frac{3}{5} = ?$



4) $\frac{1}{2}$ of $2\frac{1}{2}$ = $\frac{1}{2}$ x $2\frac{1}{2}$ = ?

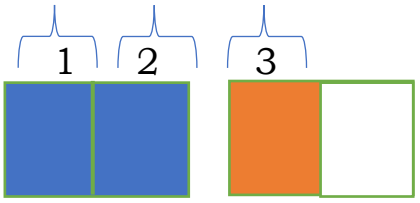


Note : the product illustrated below: = $\frac{5}{4}$ *or* $1\frac{1}{4}$



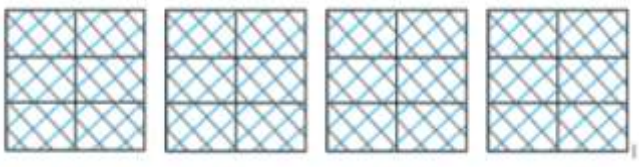
5) $1\frac{1}{2}$ of $2\frac{2}{3}$ = $1\frac{1}{2}$ x $2\frac{2}{3}$ = ?

Represented : $1\frac{1}{2} = \frac{3}{2}$ is



$2\frac{2}{3} = \frac{8}{3}$ is

So, $\frac{3}{2}$ x $\frac{8}{3}$ = $\frac{24}{6}$ = 4



Therefore, $1\frac{1}{2}$ of $2\frac{2}{3}$ = $\frac{24}{6}$ = 4.

What's More

Directions: Do the following exercises below.

A. Illustrate the given fractions and the product by shading the figure below.
B.

1) $\frac{1}{2}$ of $\frac{1}{3}$ =

2) $\frac{3}{4}$ of $\frac{3}{5}$ =

C. Illustrate the fractions given using the figures.

3) $\frac{2}{4}$ of $2\frac{3}{8}$ =

4) $\frac{3}{4}$ of $1\frac{1}{3}$ =

5) $\frac{1}{2}$ of $1\frac{1}{2}$ =

What I Have Learned

How do we visualize the multiplication of fractions?

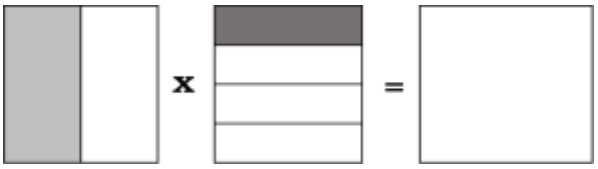
- Multiplication of fractions can be visualized by paper folding or by shading the drawing.

How is visualization done using drawing?

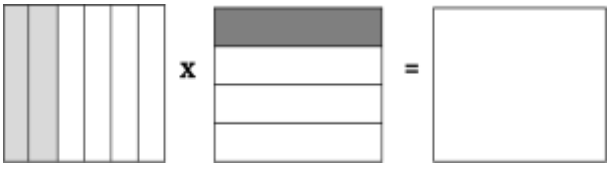
- First, draw the shaded part of the fractions in cross directions, then to find the product, just count the double shaded part.

What I Can Do

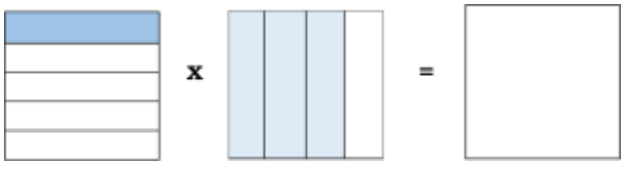
Directions: Give the fractions illustrated by the figure and illustrate the product in the indicated figure.

1) 

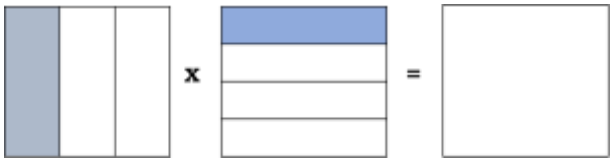
_____ X _____ = _____

2) 

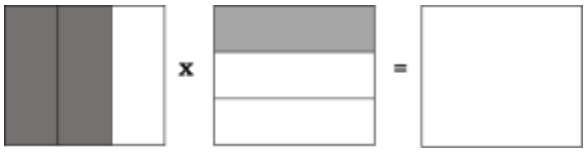
_____ X _____ = _____

3) 

_____ X _____ = _____

4) 

_____ X _____ = _____

5) 

_____ X _____ = _____

Assessment

Let us find out what you can do!

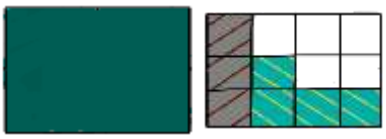
Directions: Read the statements below. Illustrate and write the letter of the answer in your worksheet.

1) Which figure illustrates $\frac{1}{2}$ of $\frac{1}{2}$?

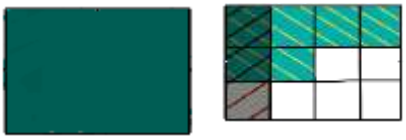
A. B. C. D.

2) Which model shows $\frac{1}{4}$ of $1\frac{2}{3}$?

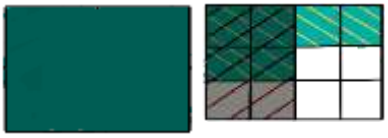
A.



C.

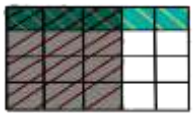
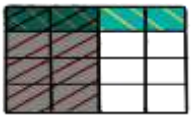
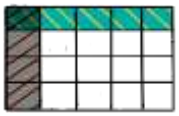


B.

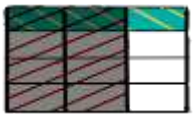
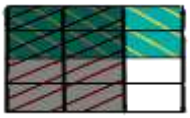
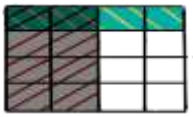
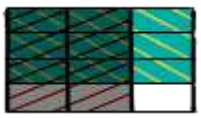


D.

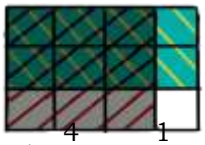
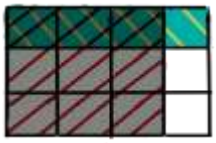
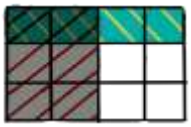
3) Which illustration below shows $\frac{3}{5}$ of $\frac{1}{4}$?

A. B.  C.  D. 

4) Illustrate $\frac{1}{4}$ of $\frac{2}{3}$. Which of the following figures is correct?

A.  B.  C.  D. 

5) What is $\frac{1}{3}$ of $\frac{3}{4}$?

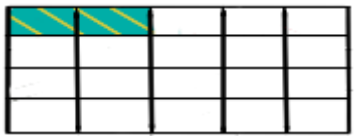
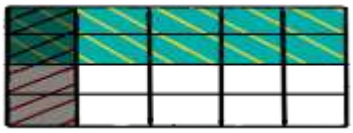
A.  B.  C.  D.

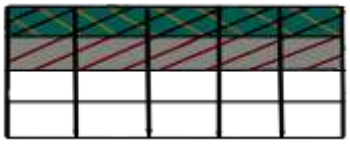
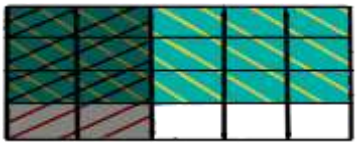
6) Represent $\frac{4}{8}$ x $\frac{1}{2}$.

A. C.

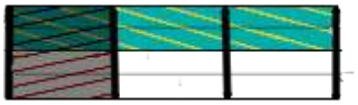
B. D.

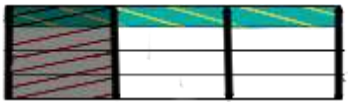
7) How will you illustrate $\frac{1}{5}$ x $\frac{2}{4}$?

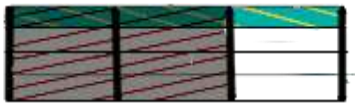
A.  C. 

B.  D. 

8) Which represents $\frac{1}{3}$ x $\frac{2}{4}$ correctly?

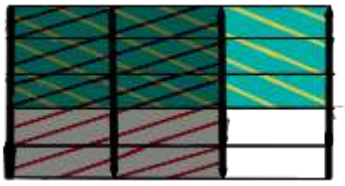
A. 

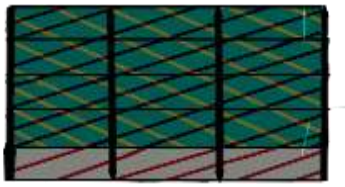
C. 

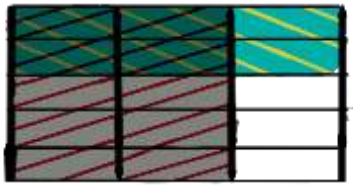
B. 

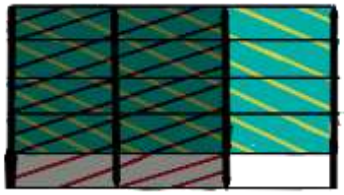
D.

9) Which illustration shows $\frac{2}{3}$ x $\frac{3}{5}$?

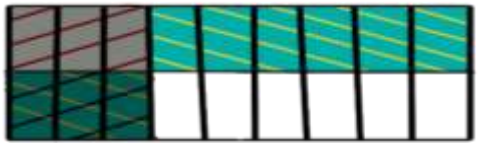
A. 

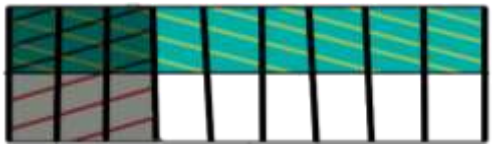
C. 

B. 

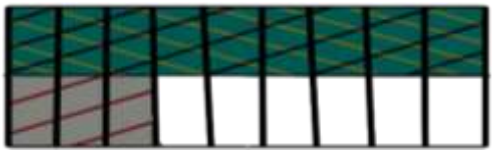
D. 

10) Which is $\frac{3}{10}$ x $\frac{1}{2}$ in the following illustrations?

A. 

C. 

B.

D. 

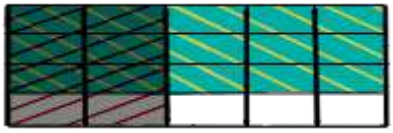
Additional Activities

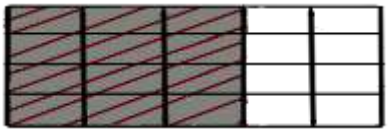
Hi, Mathletes !

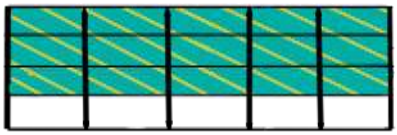
Challenge yourself, do the activity below! Good luck!

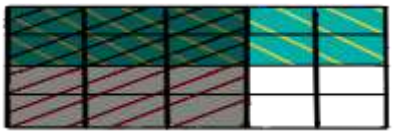
Directions: Find the product and choose the letter of the correct answer.

1) $\frac{2}{5} \times \frac{3}{4} =$

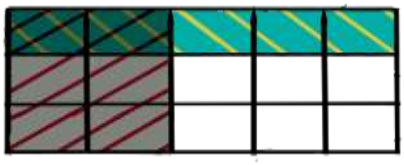
A. 

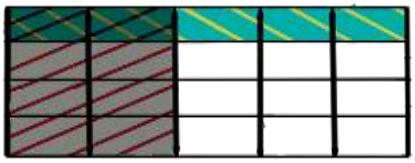
C. 

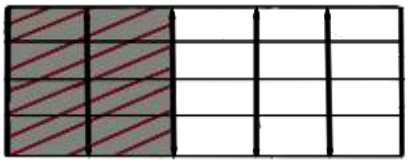
B. 

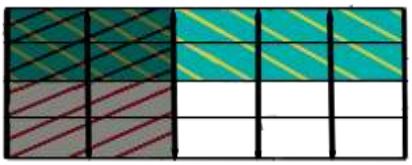
D. 

2) $\frac{2}{5} \times \frac{1}{4} =$

A. 

C. 

B. 

D. 

3) $\frac{1}{3}$ of $\frac{1}{4}$

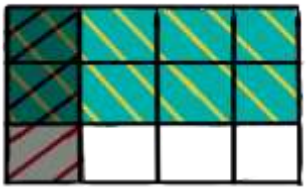
A.

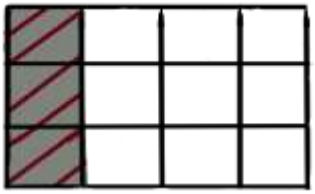
C.

B.

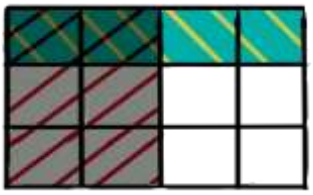
D.

4) $\frac{1}{4}$ x $\frac{2}{3}$

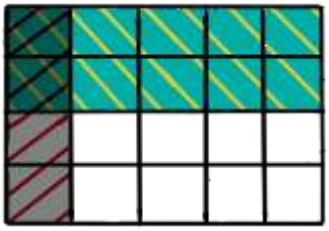
A. 

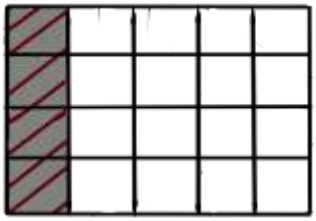
C. 

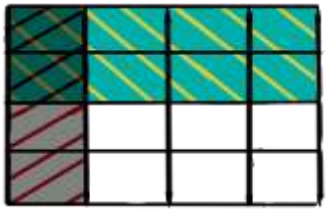
B.

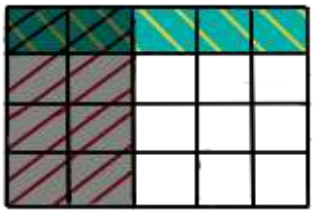
D. 

5) $\frac{1}{5}$ x $\frac{2}{4}$

A. 

C. 

B. 

D. 

Answer Key

4. C 5. B

9. B 10. B

4. 3/5 5. 1/10

1/3 x ¾ 4. Visualize the problem

What's More:

What I Can Do:

1/2 x 1/4 2/6 x 1/4 1/6 x 3/4 1/3 x 1/4 2/3 x 1/3

Assessment

1. B	6. D	1. A
2. B	7. C	2. C
3. B	8. A	3. B
4. A	9. A	4. A
5. B	10. D	5. A

Additional Activities

What I have Learned

a. Simplify
b. Multiply
c. Fractions
d. denominators

References

Borromeo, M. et.al. *21st Century Mathletes Teacher's Manual* in Grade 5 K to 12 Grade 5 Learner's Material in Mathematics (Q1 – Q4).

Lumbre, A. P. et. al. *21st Century Mathletes Textbook* in Grade 5.

DepEd Bureau of Elementary Education. 2010. *Lesson Guide in Mathematics Grade 5*

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