

Apple Math

Grade Level: K-3

Approximate Length of Activity: One-two class periods

Objective

Teacher

1. Introduce students to Michigan apple production.
2. Challenge students with math problems using apples and agriculture as an example.

Students

1. Become aware of the importance of apples to Michigan agriculture.
2. Work through various math problems using apples as an example.

Michigan Content Standards: (Math) N.ME.00.04; N.MR.00.09; N.FL.01.02; M.PS.01.08; N.ME.01.03; N.FL.02.11; N.ME.02.18; N.FL.03.0; N.MR.03.15; N.ME.03.16

Background

Michigan's climate and the influence of the Great Lakes are good for growing apples. The lakes temper cold winter temperatures to protect apple trees from frost damage. In the late summer through fall, cool weather is good for harvesting. The result is flavorful, crisp apples.

Apples are the largest fruit crop grown in Michigan. Michigan produced over 1.25 billion pounds of fruit in 2004 including apples, tart cherries, sweet cherries, blueberries, peaches, grapes, strawberries, pears and plums. Just over 60 percent of that amount was apples, which totaled 760 million pounds.

Nearly 1,000 apple growers farm near Lake Michigan. About 41,000 acres of apple trees are planted across the mitten-shaped state. Michigan growers improve the color and size of apples by color picking, improved fertilizer practices, summer pruning and careful thinning.

Apples are the largest of Michigan's fruit and vegetable crops:

- Around 18 million bushels of apples are grown each year.
- Michigan is one of the United States top three apple-producing states each year.

Michigan apple crop sizes have grown over the last few seasons due to:

- Advanced technology.
- Increased growing of several varieties of apples.
- More trees being planted.
- Young trees now reaching apple bearing age.

The apple industry adds \$400-500 million to Michigan's economy through:

- Growing
- Shipping and packing
- Processing

Longtime favorite varieties still dominate Michigan's orchards. The most prevalent variety remains the Red Delicious, followed closely by the Golden Delicious. However, the Gala or Royal Gala apple is rapidly gaining a tradition.

Michigan also plays a vital role in processed apples. More than 68 percent of all Michigan apples are processed. Michigan is the largest supplier of apple slices used in commercially prepared apple pies. Michigan apples are also a main source for applesauce, fresh-cut slices, and fresh and shelf-stable apple cider.

According to the United States Department of Agriculture, the total U.S. apple crop has averaged around 235 million bushels per year.

There are many fun ways to help your students polish their math skills using apples. Complete the worksheets on the pages to come.

Materials Needed

- Copies of "Apple Math" worksheets

Activity Outline

1. Read and discuss the background.
2. Utilize attached worksheets to practice math operations.

Discussion Questions

1. Why is Michigan a good location for growing apples?
2. Do you eat apples for a snack?
3. Why should we eat apples?
4. What variety of apple do you like best?

Related Activities

1. This lesson was provided by the Michigan Apple Committee. For more information and activities contact: 13105 Schavey Rd., Suite 2, DeWitt, MI 48820, (800) 456-2753, www.MichiganApples.com
2. The lesson "The Apple Tree" located in the language arts section of this curriculum guide.
3. The lesson "Nature's Toothbrush" located in the health section of this curriculum guide.
4. The lesson "How to Pick the Best" located in the health section of this curriculum guide.
5. Visit a local apple orchard or invite an apple grower to the classroom.

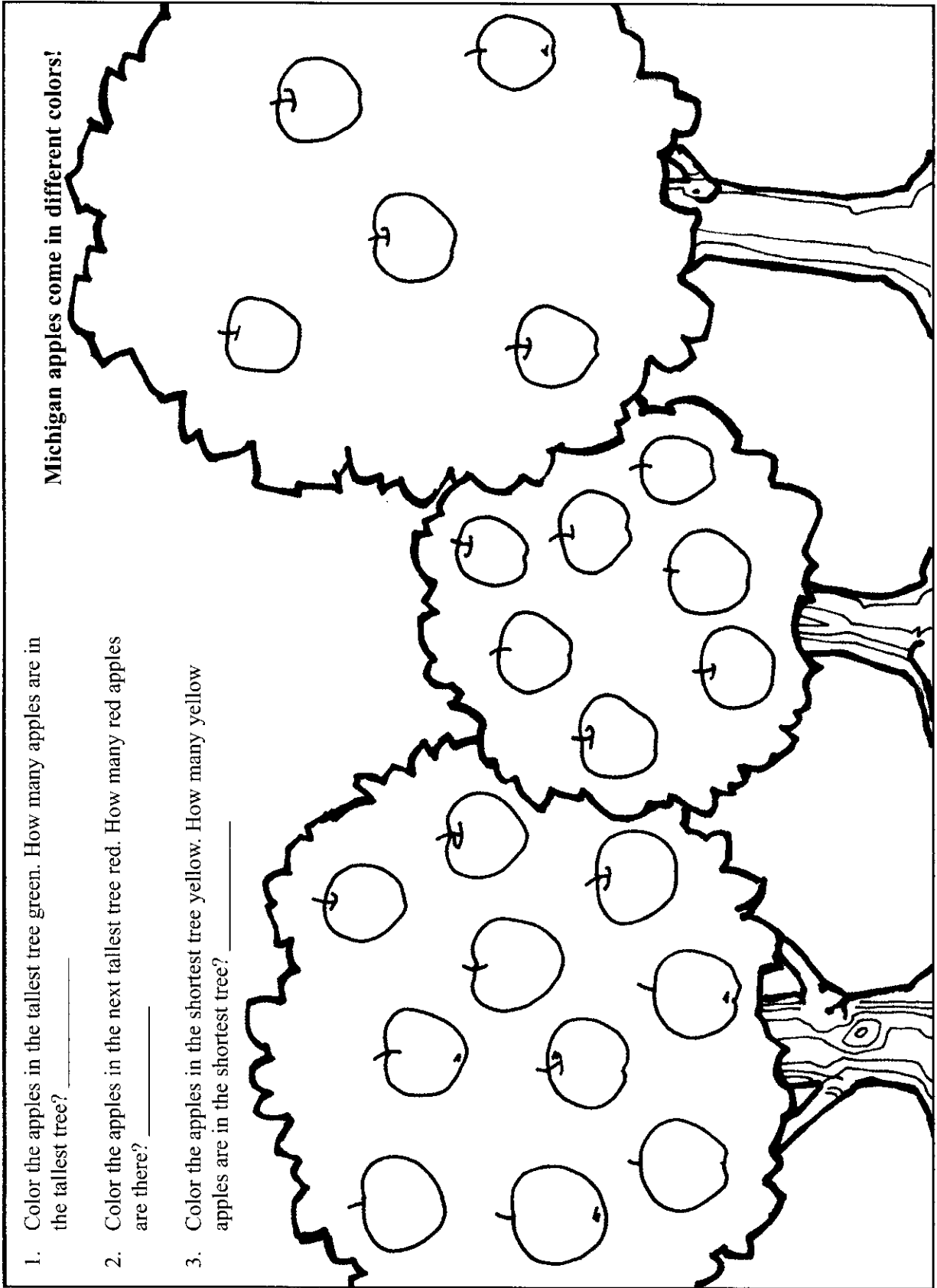
Book Resources

1. "Apple Fractions" by Jerry Pallotta
2. "Apple Picking Time" by Michele Benoit Slawson
3. "Apples, Apples, Apples" by Nancy Elizabeth Wallace

Apple Tree Worksheet

1. Color the apples in the tallest tree green. How many apples are in the tallest tree? _____
2. Color the apples in the next tallest tree red. How many red apples are there? _____
3. Color the apples in the shortest tree yellow. How many yellow apples are in the shortest tree? _____

Michigan apples come in different colors!



Apple Fractions

Measure around the apple with a string.

How big is your apple's **circumference** (distance around the outside)? _____

Cut your apple in **half**.

How many parts do you have? _____

Each part is called **one-half**.

Write one-half in a fraction. _____

Cut each half in two parts.

How many pieces do you have? _____

Each piece is called **one-fourth**.

Write one-fourth in a fraction. _____

Cut each piece into two parts again.

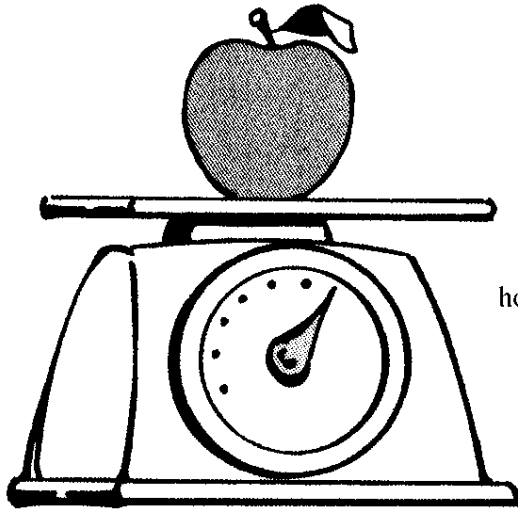
How many pieces are there all together?

Each piece is called one-eighth or _____

Eat a piece of your apple. Write why you like to eat apples.

Apple Math

An apple weighing 3 lbs., 1 oz. was reported by F. Foveridge of Ross-on-Wye, England, in 1965 to the *Guinness Book of World Records*.



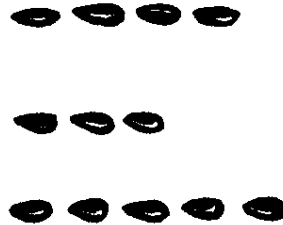
Apple Comparisons

Using a scale, have students estimate how many apples are in a $\frac{1}{2}$ peck, a peck, a $\frac{1}{2}$ bushel and a 3 lb. bag. Have students estimate the weight of each container. Compare the cost of apples by the pound for each size.

Mr. & Mrs. Harold Spittler of Arcanum, Ohio, grew two Stark Jumbo apples in 1985 that measured $17\frac{1}{2}$ inches in circumference according to the *Guinness Book of World Records*.

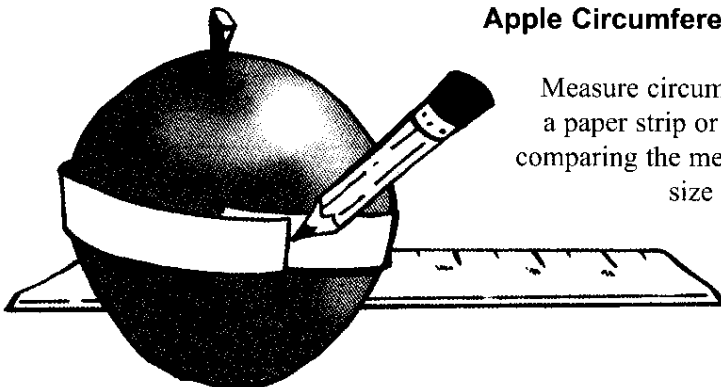
Count The Apple Seeds

Bring in several different apple varieties and have students guess the number of seeds. Use seeds for math games or graphing by variety and size of apples and the number of seeds found in each.





Apple Circumference

Measure circumference of apples by placing a paper strip or a string around an apple and comparing the measurement to a ruler. What size apples are packed in bags and what size are sold bulk?



Apple Math I

1. 6  2  4  How many apples altogether? _____



2. 10  on a tree. 4  fell off. How many apples are left on the tree? _____

3. 15  . Bobby ate 4  . How many are left? _____



4. Which apple is cut in half?   

5. Which apple is cut in fourths?   

6. 3  3  on each  How many apples altogether? _____

7. 7  . 6 more  . How many apples altogether? _____

8. Which apple is cut in thirds?   

9. 8  . Mother used 5  for a pie. How many apples are left? _____

10. Mr. Rasch had 50 apple trees in his orchard. There were 5 equal rows in the orchard. How many apple trees in each row? _____

Apple Math II

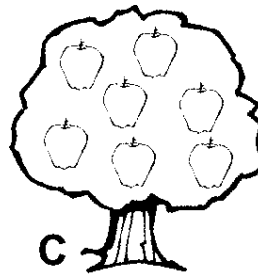
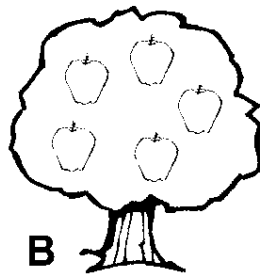
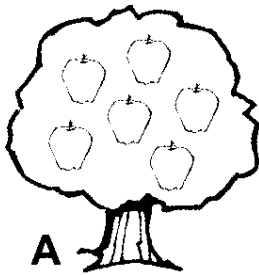
Color the apple that has the greater number:



Compare the apple numbers with less than (<) or more than (>):



Complete these number patterns:



7. Which tree has the most apples? _____
8. Which tree has the fewest apples? _____
9. Pick all the apples on trees A and B. How many do you have? _____
10. Pick all the apples on trees A and C. How many do you have? _____
11. You have 12 apples. Which two trees did you pick? _____
12. How many apples on trees A, B, and C? _____
13. Three apples fell off tree C. How many are left? _____
14. Four apples have been eaten off of tree B. How many are left? _____

Apple Math Tasks I



75 boxes of apples were loaded on a truck in Sparta, Michigan. 85 more boxes were loaded on in Belding, Michigan. How many boxes of apples were sent to market?



Debbie picked apples from 8:00 a.m. until 5:00 p.m. She took an hour off for lunch. How many hours did Debbie work?



The smaller and bruised apples were pressed into 16 gallons of cider. How many quarts would that be?



If apples are selling for \$7.98 a bushel, how much would 3 bushels cost?



George Adrian of Indianapolis, Indiana, picked 366 bushels of apples in 8 hours on September 23, 1980. How many bushels of apples did George pick per hour?



There were 55 rows of apple trees in John's orchard. Steve's orchard had 63 rows of trees. The orchard down the road had 87 rows. How many rows of trees did they have altogether?





David and Cindy picked apples on Saturday. David had 385 apples in his bin. Cindy had 263. How many more did David pick than Cindy?





Carrie bought a peck of apples for \$2.20. She gave the clerk \$5.00. How much change did she get back?


Apple Secret Code


1. $134 + 126 =$ 


7. $678 \div 6 =$ 


13. $216 - 3 =$ 


2. $516 - 207 =$ 


8. $129 - 6 =$ 


14. $467 - 4 =$ 


3. $196 + 328 =$ 


9. $520 \div 5 =$ 


15. $2214 - 2016 =$ 


4. $615 - 236 =$ 


10. $648 \div 4 =$ 

16. $616 + 289 =$ 

5. $265 \times 8 =$ 

11. $326 - 9 =$ 

6. $219 - 68 =$ 

12. $431 - 3 =$ 

$$\begin{array}{r} \hline 524 \ 1293 \quad 524 \ 260 \ 260 \ 309 \ 905 \quad 524 \quad 113 \ 524 \ 2934 \end{array}$$

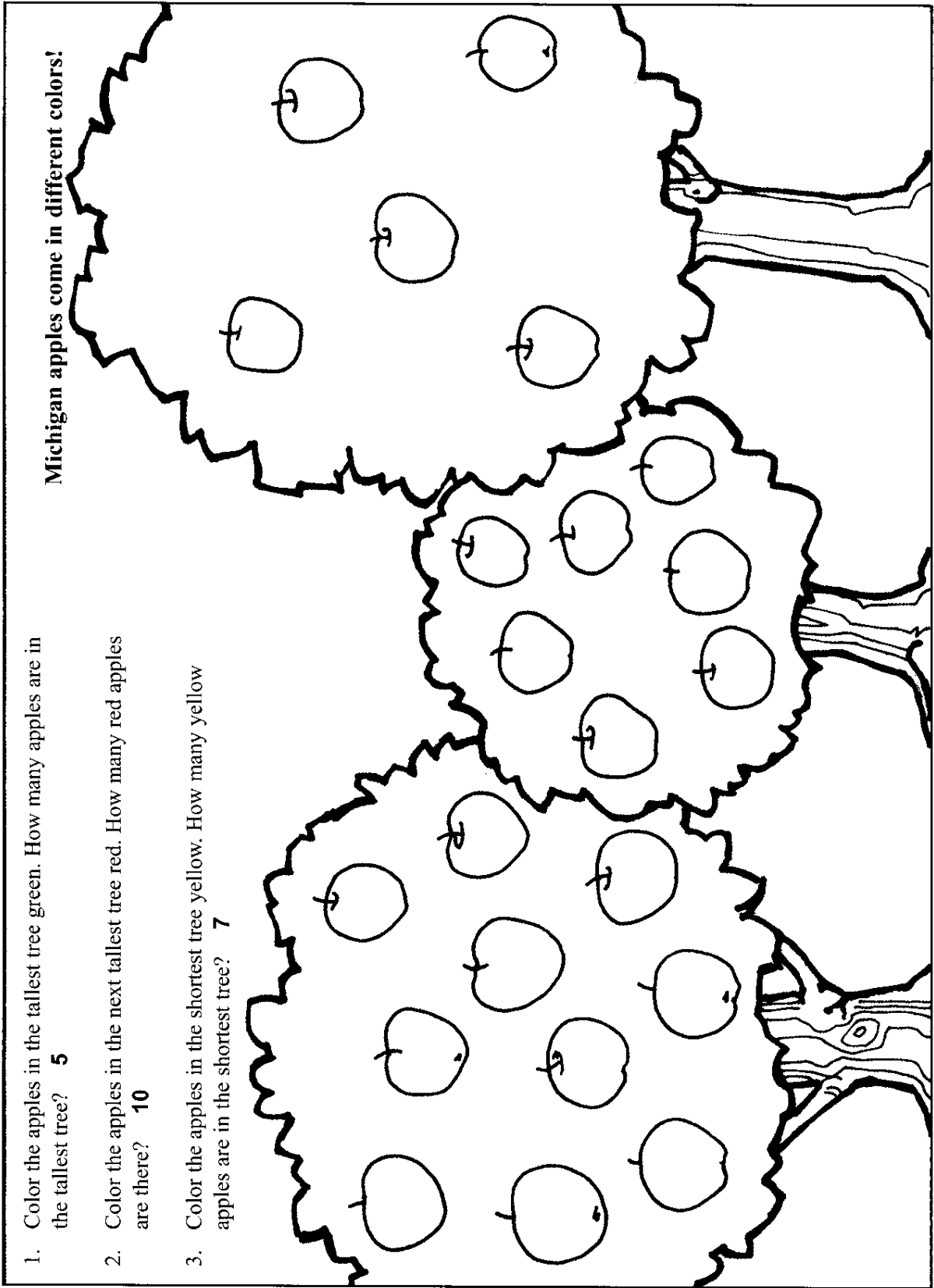
$$\begin{array}{r} \hline 162 \ 905 \ 905 \ 260 \ 1868 \quad 774 \ 2120 \ 905 \quad 113 \ 72 \ 198 \ 774 \ 72 \ 151 \end{array}$$

$$\begin{array}{r} \hline 524 \ 104 \ 524 \ 2934 \ 379 \end{array}$$

Apple Tree Worksheet

1. Color the apples in the tallest tree green. How many apples are in the tallest tree? **5**
2. Color the apples in the next tallest tree red. How many red apples are there? **10**
3. Color the apples in the shortest tree yellow. How many yellow apples are in the shortest tree? **7**

Michigan apples come in different colors!



Apple Fractions

Measure around the apple with a string.

How big is your apple's **circumference** (distance around the outside)? _____

Cut your apple in **half**.

How many parts do you have? **2**

Each part is called **one-half**.

Write one-half in a fraction. $\frac{1}{2}$

Cut each half in two parts.

How many pieces do you have? **4**

Each piece is called **one-fourth**.

Write one-fourth in a fraction. $\frac{1}{4}$




Cut each piece into two parts again.



How many pieces are there all together? **8**



Each piece is called one-eighth or $\frac{1}{8}$


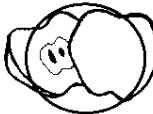

Eat a piece of your apple. Write why you like to eat apples.




Apple Math I




1. 6  2  4  . How many apples altogether? **12**



2. 10  on a tree. 4  fell off. How many apples are left on the tree? **6**




3. 15  . Bobby ate 4  . How many are left? **11**



4. Which apple is cut in half?   

5. Which apple is cut in fourths?   

6. 3  . 3  on each  . How many apples altogether? **9**

7. 7  . 6 more  . How many apples altogether? **13**

8. Which apple is cut in thirds?   

9. 8  . Mother used 5  for a pie. How many apples are left? **3**

10. Mr. Rasch had 50 apple trees in his orchard. There were 5 equal rows in the orchard. How many apple trees in each row? **10**

Apple Math II

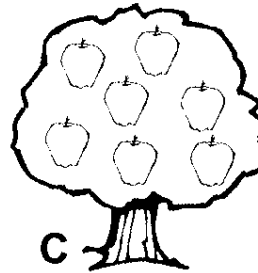
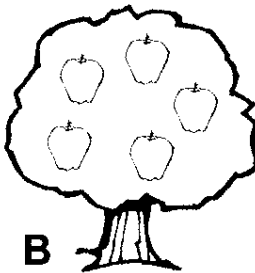
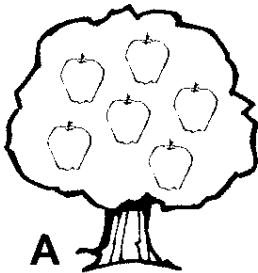
Color the apple that has the greater number:



Compare the apple numbers with less than (<) or more than (>):

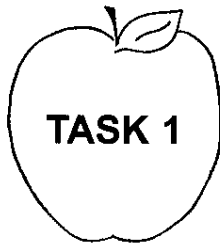


Complete these number patterns:



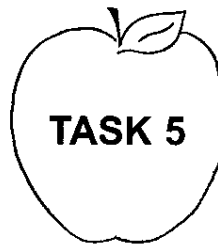
7. Which tree has the most apples? **C**
8. Which tree has the fewest apples? **B**
9. Pick all the apples on trees A and B. How many do you have? **11**
10. Pick all the apples on trees A and C. How many do you have? **13**
11. You have 12 apples. Which two trees did you pick? **B and C**
12. How many apples on trees A, B, and C? **18**
13. Three apples fell off tree C. How many are left? **4**
14. Four apples have been eaten off of tree B. How many are left? **1**

Apple Math Tasks I



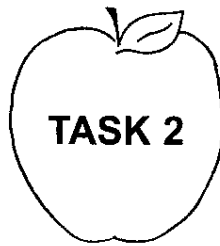
75 boxes of apples were loaded on a truck in Sparta, Michigan. 85 more boxes were loaded on in Belding, Michigan. How many boxes of apples were sent to market?

160 boxes



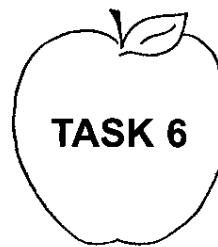
Debbie picked apples from 8:00 a.m. until 5:00 p.m. She took an hour off for lunch. How many hours did Debbie work?

8 hours



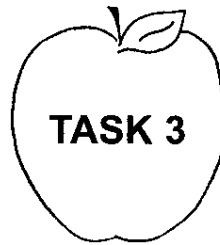
The smaller and bruised apples were pressed into 16 gallons of cider. How many quarts would that be?

64 quarts



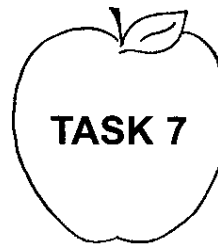
If apples are selling for \$7.98 a bushel, how much would 3 bushels cost?

\$23.94



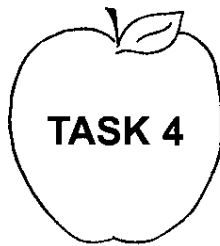
George Adrian of Indianapolis, Indiana, picked 366 bushels of apples in 8 hours on September 23, 1980. How many bushels of apples did George pick per hour?

45.75 or $45 \frac{3}{4}$ bushels per hour



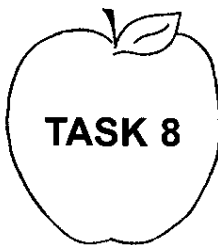
There were 55 rows of apple trees in John's orchard. Steve's orchard had 63 rows of trees. The orchard down the road had 87 rows. How many rows of trees did they have all together?

205 rows



David and Cindy picked apples on Saturday. David had 385 apples in his bin. Cindy had 263. How many more did David pick than Cindy?


122 apples





Carrie bought a peck of apples for \$2.25. She gave the clerk \$5.00. How much change did she get back?


\$2.75


Apple Secret Code


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A N A P P L E A D A Y
524 1293 524 260 260 309 905 524 113 524 2934

K E E P S T H E D O C T O R
162 905 905 260 1868 774 2120 905 113 72 198 774 72 151

A W A Y !
524 104 524 2934 379