

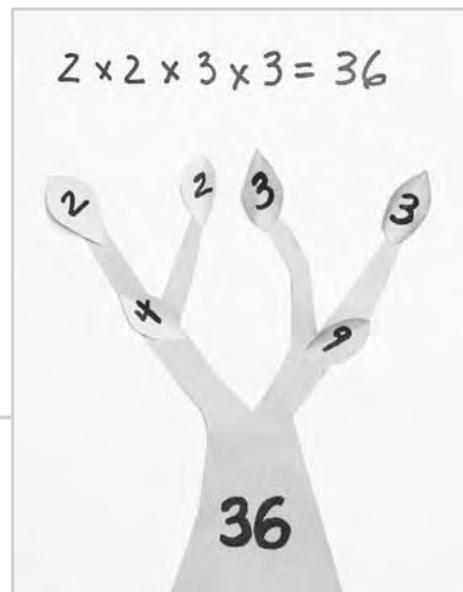
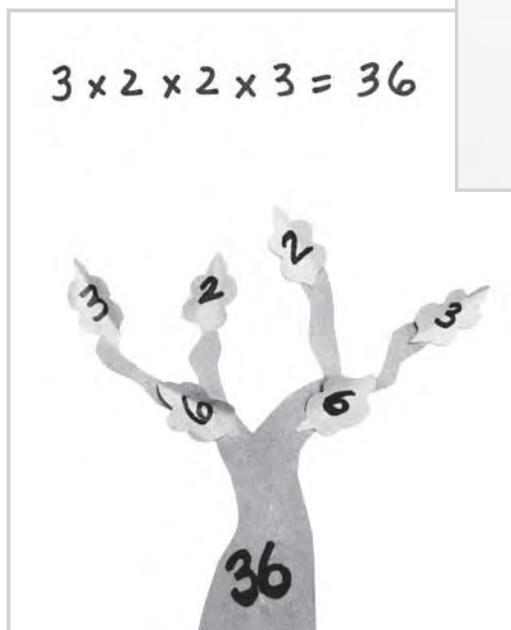
Fall Factor Trees

Students create colorful fall trees to explore factors and prime numbers.



Materials

- * construction paper (assorted fall colors including yellow, red, orange, and brown)
- * scissors
- * markers
- * glue sticks



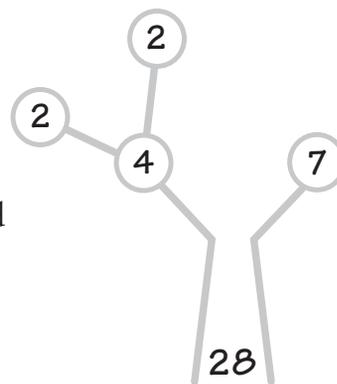
1. Begin by introducing or reviewing factors and prime numbers:

- Factors are numbers that you multiply together to equal another number. For example, $1 \times 8 = 8$ and $2 \times 4 = 8$. The numbers 1, 2, 4, and 8 are all factors of 8. Point out to students that a factor divides evenly into another number: 1, 2, 4, and 8 all divide evenly into 8.
- A prime number is any number greater than 1 that has only two factors—itsself and 1. For example, $1 \times 5 = 5$. No other whole numbers divide evenly into 5.

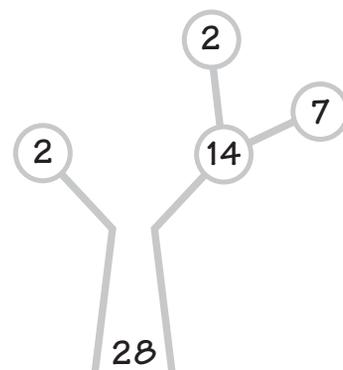
Teaching Tip

This activity lays the foundation for a deeper understanding of prime and composite numbers that students will study later on in school.

2. Model for students how to create a factor tree for the number 28 using the factors 4 and 7. Draw a simple diagram on the board, as shown. Guide them to understand how to complete each branch. What do students notice once they reach 2 and 7? (*No more branches can be added because these are both prime numbers.*) Then point out that when each of the prime numbers on the tree are multiplied by one another ($2 \times 2 \times 7$) they equal the product, 28.



3. Repeat step 2 using a different set of factors for 28, for example, 2 and 14. Guide students to notice that the final branches contain the same prime numbers.
4. Tell students that they will explore factors by making their own fall factor trees. Have each student choose a different multiplication product (or assign products to students). Tell students to sketch a factor tree diagram for their product on scrap paper using the example from step 2 as a model.



5. Let them choose a sheet of construction paper to use as a background and then draw and cut out a tree trunk and fall leaves from other paper in colors of their choice (one leaf for each factor to go on their tree). Tell them to use their sketch as a guide to how big the trunk and leaves can be.
6. Using their diagram as a guide, have students write their product on the tree trunk, draw branches, and glue on leaves that have been labeled with the factors. Have them continue drawing branches and adding factor leaves until they have only prime numbers.

7. At the top of their paper, have students write a multiplication expression that shows how the product of the prime numbers on their factor tree equals their product. If some students made factor trees for the same product, have them compare and contrast the appearance of their trees. Guide them to notice that the final factors (prime numbers) are always the same.

Teaching Tips

- * To add dimension to the leaves, students can fold them in half the long way, use a fingernail to make a crease, and then reopen.
- * Instead of drawing the branches, students might want to include them when they draw and cut out their trees from paper.