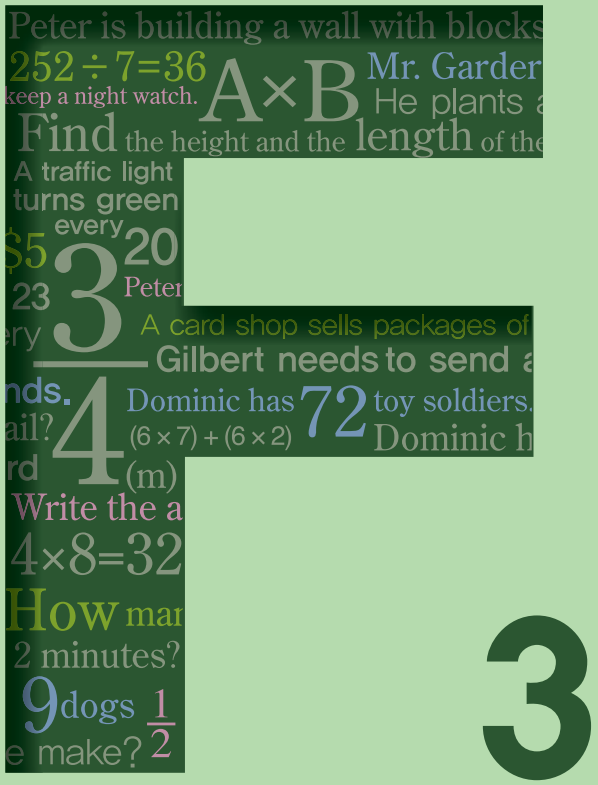
Sample Workbook

Ages 3~12

JEI® Problem Solving Math



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JEI® Self-Learning Systems, Inc.

Advantages of the Self-Learning Method

Reliable Diagnostic System

Through a data-driven, adaptive diagnostic system, JEI can accurately pinpoint a student's weakness based on specific learning objectives.

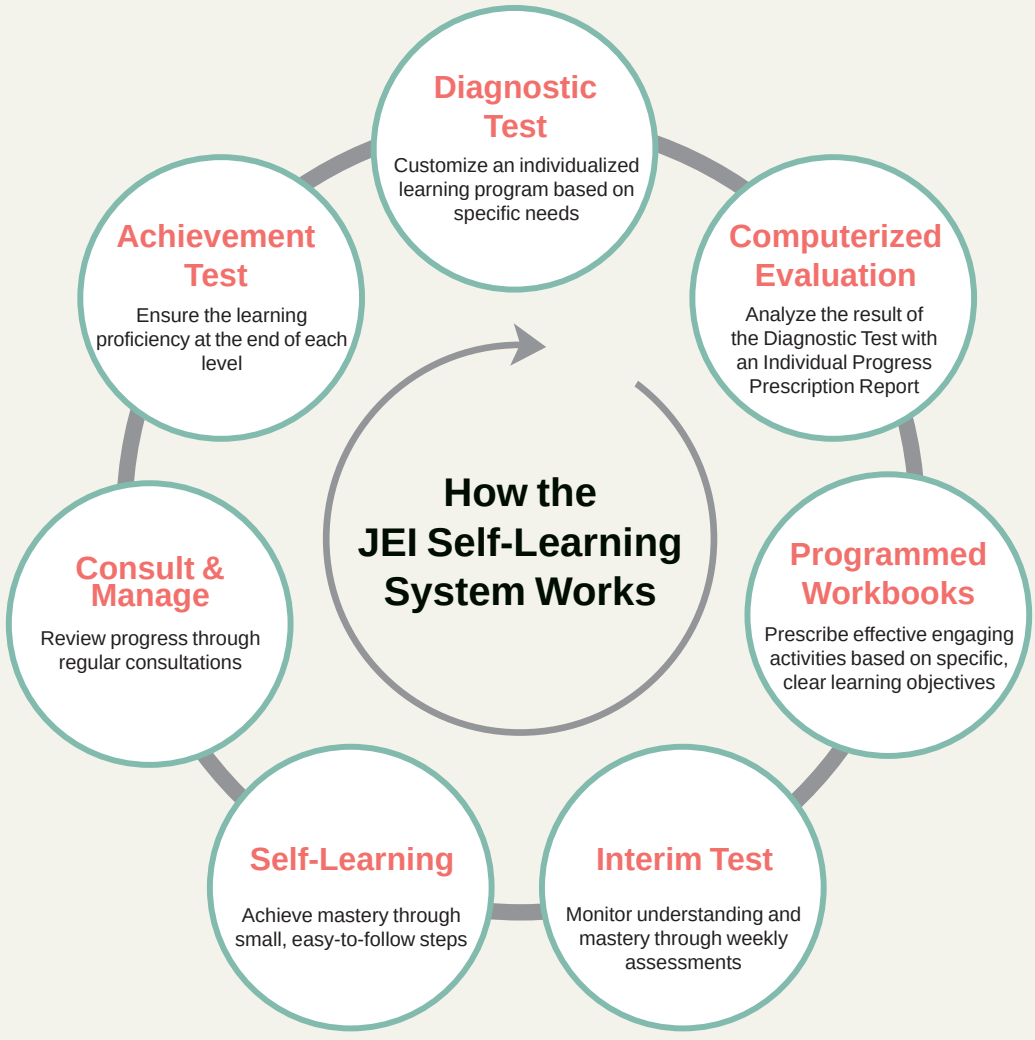
Personalized Learning

Provide personalized workbooks along with an accurate computer- analysis based on specific learning objectives.

Step-by-Step Programmed Workbooks

Help to learn by building a strong understanding of the learning objectives and progress effectively.

How JEI Self-Learning System Works



JEI Self-Learning Problem Solving Math

Develop critical and analytical thinking skills by exposing students to various types of complex questions!

JEI Problem Solving Math can help students who are already advanced in math, or who simply enjoy a good challenge. It includes math problems similar to those found in math competitions such as America Math Competition and National Math Olympiad.

While the learning domains are the same as JEI Math, Problem Solving Math delves deeper — not higher — into the world of math. Here, the focus is on reasoning and inference, which are much-needed skills for solving the problems.

Features of JEI Problem Solving Math

1 Problem Solving Math Objectives

- Build basic skills of problem solving:
  - Identify questions and finding facts
  - Create strategies to solve problems
  - Check answers
- Present real-world problems
- Prepare for the standardized testing

2 Problem Solving Math Characteristics

- Builds on basic math skills from JEI Math
- Develops critical thinking and problem solving skills and strategies
- Features the Common Core type questions

A. There were 9 rabbits in the backyard. A few rabbits hopped into the backyard. Now, there are 14 rabbits in the backyard. How many rabbits hopped into the backyard?

Step 1. Use a bar model to solve the problem.

14	
9	?

Step 2. Write a number sentence using the bar model.
$9 + ? = 14$

Step 3. Solve.
$? = 14 - 9 =$ _____

Answer: _____ rabbits hopped into the backyard.

B. There were some apples on a tree. 5 apples fell off from the tree. Now, there are 7 apples on the tree. How many apples were on the tree?

Step 1. Use a bar model to solve the problem.

?	
5	7

Step 2. Write a number sentence using the bar model.
$? - 5 = 7$

Step 3. Solve.
$? = 5 + 7 =$ _____

Answer: There were _____ apples on the tree.

Easily solve application problems of addition and subtraction by following the step-by-step explanation.

Word problems involving length units

A. Hannah is planning to use three different colored yarns to make a sweater for her mother.

- The blue yarn is 43 cm long.
- The red yarn is 28 cm longer than the blue yarn.
- The green yarn is 15 cm shorter than the red yarn.

What is the length of the green yarn?

Step 1. Find the length of the red yarn: $43 + 28 = 71$

Step 2. Find the length of the green yarn: $71 - 15 =$ _____

Answer: The length of the green yarn is _____ cm.

1. The height of the smaller cactus is 27 cm shorter than the larger cactus. What are the possible lengths of the two cacti? Circle all the possible answers.

a. 8 cm and 19 cm
b. 11 cm and 38 cm
c. 18 cm and 31 cm
d. 13 cm and 40 cm

2. Alex has two pieces of painter's tape. The first piece is 14 inches long. He attaches the pieces to make one long piece of tape, and the combined length is 43 inches. If there is an overlap of 2 inches, what is the length of the other piece of tape?

Easily solve application problems involving length units by following the step-by-step explanation.

Part A. The Shirt Shack has 210 T–shirts now. The owner orders 40 T–shirts each in 3 different colors for the store. How many T–shirts will the store have when this order comes in?

Step 1. Since the owner orders 40 T–shirts each in 3 different colors, multiply.

$3 \times 40 =$ _____

Step 2. To find the total number of T–shirts after the order, add to the original 210 T–shirts.

$210 + 120 =$ _____

Answer: _____ T–shirts

1. For a potluck dinner, Steve invited 5 friends and they each brought 3 food items. Steve also prepared 2 food items himself. What is the total number of food items? Write the operations in the ◯s and the numbers in the □s to solve the problem.

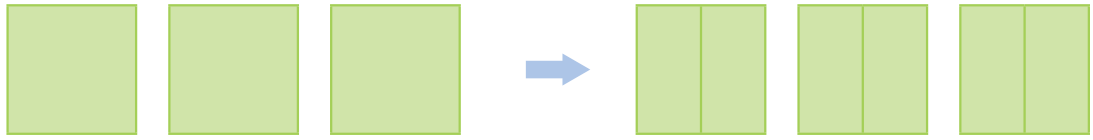
□ ◯ □ ◯ □ = □

2. Julian has 4 cats, and each of them eats 2 cans of food per day. If Julian wants to buy 8 days' worth of food, how many cans does he have to buy?

Easily solve two-step word problems by following the step-by-step explanation.

Word problems involving division of fractions

A. Joseph had 3 sheets of green paper, and he cut each sheet in half. How many half sheets of paper does he have now?

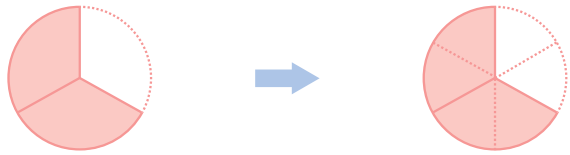


Step 1. Write a numerical expression of the problem: $3 \div \frac{1}{2}$

Step 2. Reciprocate the divisor and multiply: $3 \times \frac{2}{1} =$ ____

Answer: Joseph has ____ half sheets of paper now.

B. Mrs. Bennet wants to divide $\frac{2}{3}$ of a cake equally among 4 children. What fraction of the cake will each child get?



Step 1. Write a numerical expression of the problem: $\frac{2}{3} \div 4$

Step 2. Rewrite the whole number as a fraction: $\frac{2}{3} \div \frac{4}{1}$

Step 3. Reciprocate the divisor and multiply: $\frac{2}{3} \times \frac{1}{4} =$ ____ $=$ ____

Answer: Each child will get ____ of the cake.

Easily solve word problems involving division of fractions by following the step-by-step explanation.

Understanding the coordinate plane

Coordinate plane: a two-dimensional space formed by two perpendicular number lines, the x-axis and y-axis

***x*-axis**: the horizontal number line

***y*-axis**: the vertical number line

Origin: the point $(0, 0)$ where the x-axis and y-axis intersect

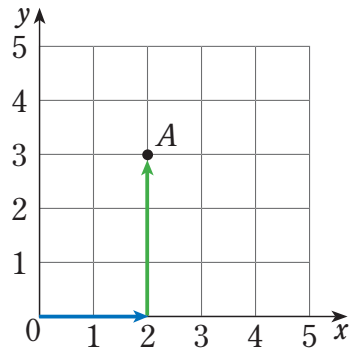
Ordered pair: the x-coordinate and y-coordinate (x, y) which is used to locate the position of a point on the coordinate plane

A. Plot the ordered pair $(2, 3)$ and label it A.

Step 1. Since the x-coordinate of the ordered pair is 2, start at the origin and move ____ units to the right.

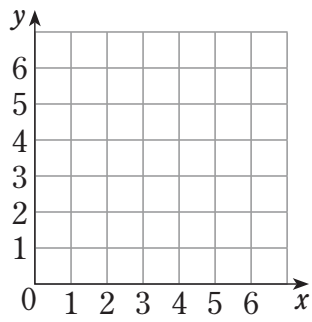
Step 2. Since the y-coordinate of the ordered pair is 3, move ____ units up.

Step 3. Plot the point and label it A on the coordinate plane.



1. If $(2, 2)$ and $(2, 5)$ are the ordered pairs of 2 vertices of a square, what are the ordered pairs of the other 2 vertices? Use the coordinate plane at the right.

   a. $(1, 2)$ and $(1, 5)$
   b. $(0, 3)$ and $(4, 3)$
   c. $(5, 2)$ and $(5, 5)$
   d. $(4, 2)$ and $(4, 6)$



Understand the coordinate plane and express given points on the coordinate plane.