

MATHEMATICS

Curriculum Overview Grades K-12

Kindergarten

1-40	41-80	81-120	121-160
Directions-right, left, high, low, etc. Comparisons-big, little, alike, different Matching Cardinal Numbers-to 9 Colors-red, blue, green, yellow, brown ,purple Shapes-circle, square, rectangle, triangle Number Order Before and After Ordinal Numbers-to 9th Problem Solving	Directions-right, left, high, low, etc. Comparisons-big, little, alike, different Matching Cardinal Numbers-to 12 Colors-orange Shapes-circle, square, rectangle, triangle Number Order Before and After Ordinal Numbers-to 9th Problem Solving Number Words-to nine Addition-to 9	Directions-right, left, high, low ,etc. Comparisons-big, little, alike, different Matching Cardinal Numbers-to 19 Colors-black, white Shapes-circle, square, rectangle, triangle Number Order Before and After Ordinal Numbers-to 9th Problem Solving Number Words-to nine Addition-multiples of 10 Subtraction-to 9 Place Value Time/Calendar	Directions-right, left, high, low, etc. Comparisons-big, little, alike, different Matching Cardinal Numbers-to 100 Colors-pink Shapes-circle, square, rectangle, triangle Number Order Before and After Ordinal Numbers-to 9th Problem Solving Number Words-to nine Addition-to 10 and multiples of 10 Subtraction-to 10 Place Value Time/Calendar Money Skip Counting -2's, 5's, 10's Greater1 Less than

INSTRUCTIONS FOR ELEVENTH GRADE MATHEMATICS

The LIFEPAC curriculum from grades two through twelve is structured so that the daily instructional material is written directly into the LIFEPACs. The student is encouraged to read and follow this instructional material in order to develop independent study habits. The teacher should introduce the LIFEPAC to the student, set a required completion schedule, complete teacher checks, be available for questions regarding both content and procedures, administer and grade tests, and develop additional learning activities as desired. Teachers working with several students may schedule their time so that students are assigned to a quiet work activity when it is necessary to spend instructional time with one particular student.

Mathematics is a subject that requires skill mastery. But skill mastery needs to be applied toward active student involvement. Measurements require measuring cups, rulers, empty containers. Boxes and other similar items help the study of solid shapes. Construction paper, beads, buttons, beans are readily available and can be used for counting, base ten, fractions, sets, grouping, and sequencing. Students should be presented with problem situations and be given the opportunity to find their solutions.

Any workbook assignment that can be supported by a real world experience will enhance the student's ability for problem solving. There is an infinite challenge for the teacher to provide a meaningful environment for the study of mathematics. It is a subject that requires constant assessment of student progress. Do not leave the study of mathematics in the classroom.

The Teacher Notes section of the Teacher's Guide lists the required or suggested materials for the LIFEPACs and provides additional learning activities for the students. Additional learning activities provide opportunities for problem solving, encourage the student's interest in learning and may be used as a reward for good study habits.

I. MATERIALS NEEDED:

Required:
none

Suggested for LIFEPAK:
straightedges

II. ADDITIONAL LEARNING ACTIVITIES

Section I Numbers

1. Discuss the difference between rational numbers and irrational numbers.

Section II Sentences

1. Discuss how inequalities involving absolute value can be used to describe certain neighborhoods of a real number c , e.g., $|x - 3| < 2$ is a way to write the open interval $-2 < (x - 3) < 2$ or $1 < x < 5$ or $(1, 5)$, which is a neighborhood of $c = 3$.
2. Show the class how not all inequalities involving absolute values describe neighborhoods, i.e., $|x - 3| > 2$ may be written $-2 > (x - 3)$ or $(x - 3) > 2$, or as $1 > x$ or $x > 5$, which does not describe a neighborhood of $c = 3$. The following figure illustrates the set of numbers x such that $1 > x$ or $x > 5$ is not an open interval that contains $c = 3$.

$$1 > x > 5$$



3. Divide students into four groups. Each group is to tell whether or not each of the following inequalities describes a neighborhood of $c = 4$. If not, the group is to explain why not. Each group takes turns giving its solution and the other groups critiquing their solution.

a. $|x - 4| < 2$

c. $|x - 3| < 2$

b. $|x - 4| \leq \frac{1}{2}$

d. $|x - 4| \geq 2$

cont.

Parabola:

$$\begin{aligned} x^2 - y &= 3 \\ -y &= -x^2 + 3 \\ y &= x^2 - 3 \end{aligned}$$

x	0	± 1	± 2
y	-3	-2	1

Line:

x	0	-3
y	3	0

$$x - y = -3$$

$$x = y - 3$$

$$x^2 - y = 3$$

$$(y - 3)^2 - y = 3$$

$$y^2 - 6y + 9 - y = 3$$

$$y^2 - 7y + 9 = 3$$

$$y^2 - 7y + 6 = 0$$

$$(y - 1)(y - 6) = 0$$

$$y - 1 = 0 \quad y - 6 = 0$$

$$y = 1 \quad y = 6$$

If $y = 1$: $x = 1 - 3$

$$x = -2$$

If $y = 6$: $x = 6 - 3$

$$x = 3$$

Check of one solution, $(-2, 1)$:

$$(-2)^2 - 1 = 3$$

$$4 - 1 = 3$$

$$3 = 3$$

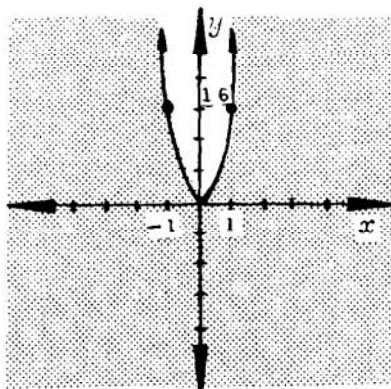
$$-2 - 1 = -3$$

$$-3 = -3$$

The other solution, $(3, 6)$, can be checked in a similar manner. Solution set:

$\{(-2, 1), (3, 6)\}$

18.



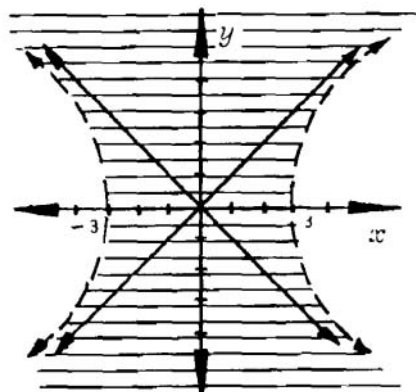
Graph $y = 16x^2$.

x	0	± 1	± 2
y	0	16	64

parabola opens up with vertex $(0, 0)$. Use a solid path since the \leq includes $=$. Check points inside or outside.

Check $(1, 0)$: $0 \stackrel{?}{\leq} 16(1)^2$
 $0 \leq 16$ is true;
 \therefore the outside of the parabola is shaded.

19.



Graph $x^2 - y^2 = 9$.

$$\frac{x^2}{9} - \frac{y^2}{9} = 0$$

Hyperbola opens horizontally with vertices $(\pm 3, 0)$.

Asymptotes are $y = \pm \frac{1}{3}x$; $y = \pm x$.