

Solving the Math Problem

The following advice is from the Illinois State Board of Education.
You will find it and much more on the ISBE website, ISBE.net

- √ Be familiar with the Illinois Learning Standards and the Assessment Frameworks
- √ Integrate test-taking skills into regular instruction
- √ Be familiar with and practice different test items with students
- √ Create a positive atmosphere for testing

Extended-Response in the Classroom: Ideas to help teachers help students

1. Explain and display the “student-friendly” version of the scoring rubric
2. Discuss “What you did” and Why you did it” for multiple-choice items, too.
3. Discuss and display a variety of student work in the classroom
4. Aim for the 4 on the rubric.
5. Use a T-chart to help guide explanations—this helps some students to remember to explain what they did and why they did it.
6. Use previous ISAT tasks from the sample books. (All are available online.)
7. Write about math in a journal.
8. Practice! Practice! Practice!

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What does the ISAT Math test require?

You can figure out some of what students need to know and be able to do from this list.

ISAT Math Terms, Grades 3-8

The following words were identified as part of the ISAT Sample Test for 2008.

The number after each word is the grade at which the sample tests first include that item. Students will need to be fluent with those terms at the higher grade levels as well.

MATH SYMBOLS

Students need to know these symbols, not only for ISAT but to be fluent in math.

Recommended activities—have students:

- ✓ *make a symbol chart*
- ✓ *play a symbol-phrase matching game*
- ✓ *make up problems using these symbols*
- ✓ *put the symbols on cards and put numbers on other cards and have them make up math sentences using these symbols and the numbers*

1. operation signs—add, subtract, multiply, divide (3)
2. the symbol for a degree, as it relates to an angle (6)
3. the symbol for a finite line segment (6)
4. the symbol for a triangle (8)
5. the symbol for an angle (6)
6. the symbol for an inequality in which one quantity is greater than or equal to another (7)
7. the symbol for an inequality in which one quantity is greater than another (6)
8. the symbol for an inequality in which one quantity is less than or equal to another (7)
9. the symbol for an inequality in which one quantity is less than another (6)
10. the symbol for base (7)
11. the symbol for diameter (7)
12. the symbol for height (7)
13. the symbol for pi (7)
14. the symbol for radius (7)
15. the symbol for the square root of a number (8)
16. the symbol for volume (7)

MATH WORDS

The following words are part of ISAT sample questions requiring students to know these parts of mathematics.

To help students comprehend them, students can:

- ✓ *Make a math term glossary*
- ✓ *Write about math using some of these words*
- ✓ *Make up questions using these words*

acute angle (5)	angle (5)	approximate (7)
approximately (7)	area (4)	bar graph (6)
centimeter (3)	characteristic (4)	chart (3)
circle graph (6)	circumference (8)	cone (3)
congruent (3)	consecutive (8)	coordinate (5)
cube (3)	cubed (4)	cubic (4)
cylinder (4)	cylindrical (8)	data (3)
data point (8)	diameter (7)	digit (3)
dimension (5)	dimensional (5)	equal (3)
equality (4)	equivalency (4)	equivalent (4)
expression (4)	figure (3)	fraction (4)
fractional (4)	grid (4)	hexagon (3)
incongruent (3)	inequality (6)	input (5)
integer (8)	intersect (5)	intersection (5)
likelihood (3)	likely (3)	line segment (4)
maximum (6)	mean (5)	median (6)
milliliter (8)	minimum (6)	mode (3)
negative (8)	number line (3)	number sentence (4)
obtuse angle (5)	output (5)	parallel (6)
parallelogram (7)	pattern (3)	pentagon (4)
perimeter (3)	perpendicular (6)	pi (7)
pictograph (3)	place value (4)	plane (7)
plot (5)	point (3)	polygon (7)
positive (8)	prism (3)	probability (4)
probable (4)	Pythagorean formula (7)	quadrilateral (8)
random (6)	randomly (6)	range (6)
ratio (5)	rational (5)	rectangle (3)
rectangular (3)	rectangular prism (4)	rectangular pyramid (5)
repeat (3)	repeating (3)	right angle (5)
right triangle (7)	scale (5)	scatter plot (7)
sector (8)	segment (4)	slope (8)
solve (3)	square (4)	square pyramid (7)
squared (4)	surface area (8)	survey (4)
symmetrical (4)	symmetry (4)	table (6)
tally (3)	trapezoid (4)	triangle (4)
triangular (4)	triangular prism (4)	triangular pyramid (5)
value (4)	Venn diagram (4)	vertex (3)
vertices (4)	volume (3)	x-axis (8)
y-axis (8)		

WORDS STUDENTS MAY FIND IN DIRECTIONS AND QUESTIONS

These words are included in questions and directions on the ISAT sample for all of grades 3-8, except for the following terms, which are included in the sample tests for grades 4-8: conclusive, measurable, relate, relationship

- √ *To help students understand these words individually, have them make a glossary.*
- √ *To help them recognize and comprehend them in questions, have them write statements and questions using these words.*

cause	compare	comparison
conclude	conclusion	conclusive
contrast	diagram	effect
estimate	estimation	graph
identification	identify	key
label	measurable	measure
predict	prediction	reflect
reflection	relate	relationship
represent	representation	similar
similarity	translate	

Math Reporters

Topic: _____

Each student writes about an important math topic.

What are some important words to know to use this math?

Word or Symbol	What It Means

What's important to know about this math?

Math Path: Show your Math Skills

Solve your problem on the left side of the arrow.



Then write an explanation of the steps on the right side.

Why I did it this way.

Student Friendly Rubric—MATH—grades 3-4 (ISBE.net)

Mathematical Knowledge: Do you know it?

- √ I get the right answer.
- √ I label my answer correctly.
- √ I use the right math words to show I understand how math works.
- √ I work it out with no mistakes.

Strategic Knowledge: How do you plan?

- √ I find all the important parts of the problem, and I know how they go together.
- √ I show a good plan about how I got my answer.
- √ I show all of the steps I use to solve the problem.
- √ I find most of the important parts of the problem.
- √ I show most of the steps I use to solve the problem.

Explanation: Can you explain it?

- √ I write what I did and why I did it.
- √ If I use a drawing, I can explain all of it in writing.

You will find the rubrics for other grade levels at ISBE.net.

MY MATH PROBLEM SOLVING STEPS

Teachers can use this guide to figure out if a student needs help at different points in problem solving.

Write answers to these questions when you solve a math word problem.

Step 1. What are you going to figure out?

Step 2: How will you do it? What will you do to solve the problem?

Step 3. Underline the information you need to find the answer.

Step 4. What do you estimate the answer will be? _____

Step 5. Solve the problem here.

What is your answer? _____

Step 6: Write to explain what you did and why.

What I Did	Why I Solved the Problem This Way

EXAMPLE: Use your skills to solve this problem.

James brings \$20 to the store. He buys a hat that costs \$16.50. The store charges 8% tax. How much is the tax?

Step 1. What are you going to figure out?

Step 2: How will you do it? What will you do to solve the problem?

Step 3. Underline information you need to find the answer.

Step 4. What do you **estimate** the answer will be? _____

Step 5: Solve the problem here.

What is your answer? _____

Step 6: Write to explain what you did and why.

What I Did	Why I Did It

My Own Guide to ISAT Math Success

What to do when you open the test booklet:

What to do when you read a word problem:

How to explain how you solved a problem:

How to make sure you have enough time to solve the problems and check your answers.

What else to do to succeed on the ISAT math test: