



®

**Open-Ended
Questions**
with
Transparency Masters
for
Grade 5
Organized by TEKS

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TEKSING TOWARD TAKS ©2008

GRADE 5 OPEN-ENDED

AUTHORS' VISION FOR IMPLEMENTATION

- The Open-Ended problem sets are designed for whole class instruction. Teachers may choose to use an Open Ended as an introduction to a TEKS concept, to increase student understanding of a TEKS concept, to close instruction for a TEKS concept before an assessment in given, etc.
- The smaller font page is the student page. Make one copy per student. .
- The larger font page is a transparency master of problems at the top of the student page. Make 1 copy of each transparency page.
- The teacher sets a time limit prior to students' beginning the Open-Ended. Partner pairs are given specific "share" portions of the Open-Ended. The process that should be followed by all partner pairs is to complete the questions at the bottom of the page first (except for the **Extension**), then complete the solution(s) to the problem(s) at the top of the page, then complete the **Extension** at the bottom of the page. (NOTE: the **Extension** is designed to spiral into the same TEKS or to spiral into a closely related TEKS.)
- Students work in partner pairs to complete the Open Ended problem set and record on their individual copies.
- Assign parts of the Open Ended to various partner pairs. These partner pairs become "share pairs" and share their responses to their assigned part. Partner pairs use a blank transparency and an overhead pen to record responses for the parts they are assigned to share. The share pairs must SHOW all work on the transparency – the teacher should monitor the share pairs closely and answer any questions they have about the problem.
- The teacher calls time and the partner pairs guide class discussion on their "share pair" assignments. Students who did not complete the Open-Ended prior to the time limit may record on their individual papers during the discussion time but must record in a different color.
- The Open-Ended is designed to be recorded as a portion of a classwork grade. A holistic score should be recorded for each student. A scale of 1-4 is appropriate as follows:
 - 1 = no understanding evident
 - 2 = minimal understanding evident
 - 3 = mostly understood or slight mathematical errors
 - 4 = complete understanding evident and no mathematical errors

Scores may be recorded and periodically combined and recorded as a classwork grade in a gradebook.

SUGGESTION: Record overall class success with each Open Ended (TEKS are indicated at the bottom of each page) in a Class Profile Booklet for later reference as a guide to decision-making regarding instructional time later in the school year – especially prior to TAKS testing date.

**GRADE 5 OPEN-ENDED QUESTIONS WITH TRANSPARENCY MASTERS
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TAKS Objective 1

The student will demonstrate an understanding of numbers, operations and quantitative reasoning.

TEKS	Student Expectation	Number of Open-Ended
5.1A	Use place value to read, write, compare, and order whole numbers through the 999,999,999,999	5
5.1B	Use place value to read, write, compare, and order decimals through the thousandths place	5
5.2A	Generate a fraction equivalent to a given fraction such as $\frac{1}{2}$ and $\frac{3}{6}$ or $\frac{4}{12}$ and $\frac{1}{3}$	4
5.2B	Generate a mixed number equivalent to a given improper fraction or generate an improper fraction equivalent to a given mixed number	4
5.2C	Compare two fractional quantities in problem-solving situations using a variety of methods, including common denominators	4
5.2D	Use models to relate decimals to fractions that name tenths, hundredths, and thousandths	2
5.3A	Use addition and subtraction to solve problems involving whole numbers and decimals	9
5.3B	Use multiplication to solve problems involving whole numbers (no more than three digits times two digits without technology)	6
5.3C	Use division to solve problems involving whole numbers (no more than two-digit divisors and three-digit dividends without technology), including interpreting the remainder within a given context	6
5.3D	Identify common factors of a set of whole numbers	2
5.3E	Model situations using addition and/or subtraction involving fractions with like denominators using concrete objects, pictures, words, and numbers	4
5.4	Use strategies, including rounding and compatible numbers to estimate solutions to addition, subtraction, multiplication, and division problems	4

TAKS Objective 2

The student will demonstrate an understanding of patterns, relationships and algebraic reasoning.

TEKS	Student Expectation	Number of Open-Ended
5.5A	Describe the relationship between sets of data in graphic organizers such as lists, tables, charts, and diagrams	5
5.5B	Identify prime and composite numbers using concrete objects, pictorial models, and patterns in factor pairs	2
5.6	Select from and use diagrams and equations such as $y = 5 + 3$ to represent meaningful problem situations	2

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TAKS Objective 3

The student will demonstrate an understanding of geometry and spatial reasoning.

TEKS	Student Expectation	Number of Open-Ended
5.7	Identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures	5
5.8A	Sketch the results of translations, rotations, and reflections on a Quadrant I coordinate grid (not assessed on TAKS)	2
5.8B	Identify the transformation that generates one figure from the other when given two congruent figures on a Quadrant I coordinate grid	2
5.9	Locate and name points on a coordinate grid using ordered pairs of whole numbers	4

TAKS Objective 4

The student will demonstrate an understanding of the concepts and uses of measurement.

TEKS	Student Expectation	Number of Open-Ended
5.10A	Perform simple conversions within the same measurement system (SI (metric) or customary)	4
5.10B Perimeter	Connect models for perimeter , area, and volume with their respective formulas	2
5.10B Area	Connect models for perimeter, area , and volume with their respective formulas	2
5.10B Volume	Connect models for perimeter, area, and volume with their respective formulas	2
5.10C	Select and use appropriate units and formulas to measure length, perimeter, area, and volume	8
5.11A	Solve problems involving changes in temperature	2
5.11B	Solve problems involving elapsed time	2

TAKS Objective 5

The student will demonstrate an understanding of probability and statistics.

TEKS	Student Expectation	Number of Open-Ended
5.12A	Use fractions to describe the results of an experiment	2
5.12B	Use experimental results to make predictions	3
5.12C	List all possible outcomes of a probability experiment such as tossing a coin	2
5.13A	Use tables of related number pairs to make line graphs	4
5.13B	Describe characteristics of data presented in tables and graphs including median, mode, and range	4
5.13C	Graph a given set of data using an appropriate graphical representation such as a picture or line graph	8

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TAKS Objective 6

The student will demonstrate an understanding of the mathematical processes used in problem solving.

TEKS	Student Expectation	Number of Open-Ended
5.14A	Identify the mathematics in everyday situations	6
5.14B	Solve problems that incorporate understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness	6
5.14C	Select or develop an appropriate problem-solving plan or strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem	6
5.14D	Use tools such as real objects, manipulatives, and technology to solve problems (not assessed on TAKS)	Included in other TEKS Open-Ended
5.15A	Explain and record observations using objects, words, pictures, numbers, and technology (not assessed on TAKS)	Included in other TEKS Open-Ended
5.15B	Relate informal language to mathematical language and symbols	6
5.16A	Make generalizations from patterns or sets of examples and nonexamples	6
5.16B	Justify why an answer is reasonable and explain the solution process (not assessed on TAKS)	Included in other TEKS Open-Ended

TOTAL GRADE 5 OPEN-ENDED = 152

Marcus has one pair of navy shorts, and one pair of gray shorts. He has one red t-shirt, one yellow t-shirt and one light blue t-shirt. Draw a diagram to represent all the possible outfits Marcus can choose if he wears one pair of shorts and one t-shirt. Draw your diagram on the back of this page. How many different short and t-shirt outfits can Marcus choose? _____

Now Marcus must make another decision. Marcus has 1 chocolate cookie, 1 oatmeal cookie, and 1 sugar cookie in his lunch. List all the possible orders in which Marcus can choose to eat the cookies.

1. What concepts must you understand to answer this problem?
2. How can you describe the question verbally?
3. Would a chart or table help to solve this problem? Why or why not?
4. Does a diagram help solve this problem? Why or why not?
5. What problem-solving strategy or strategies would you choose to help solve this problem? Why?

Marcus has one pair of navy shorts, and one pair of gray shorts. He has one red t-shirt, one yellow t-shirt and one light blue t-shirt. Draw a diagram to represent all the possible outfits Marcus can choose if he wears one pair of shorts and one t-shirt. How many different short and t-shirt outfits can Marcus choose?

Now Marcus must make another decision. Marcus has 1 chocolate cookie, 1 oatmeal cookie, and 1 sugar cookie in his lunch. List all the possible orders in which Marcus can choose to eat the cookies.

The school cafeteria serves apple juice, orange juice and milk for breakfast. Each drink is available in small size, medium size, and large size. Make a diagram that shows all the possible combinations of 1 kind of drink and 1 size of drink.

How many different combinations of kind and size of drink does the cafeteria serve? _____
Explain your answer.

1. What concepts must you understand to answer this problem?
2. How can you describe the question verbally?
3. Would a chart or table help to solve this problem? Why or why not?
4. Does a diagram help solve this problem? Why or why not?
5. What problem-solving strategy or strategies would you choose to help solve this problem? Why?

The school cafeteria serves apple juice, orange juice and milk for breakfast.

Each drink is available in small size, medium size, and large size.

Make a diagram that shows all the possible combinations of 1 kind of drink and 1 size of drink.

How many different combinations of kind and size of drink does the cafeteria serve? _____

Explain your answer.