Math

Question Sampler

Human Reader Companion Book

utah Aspire ACT PLUS

HIGH SCHOOL
MATH
SYMBOL LIST

+	Plus Sign
−	Minus Sign
×	Times Sign
÷	Division Sign
$\frac{\square}{\square}$	Fraction
$\square\frac{\square}{\square}$	Mixed Number
y^x	Exponent
$\sqrt{\ }$	Square Root
$\sqrt[3]{\ }$	Cube Root
=	Equal
(•)	Parenthesis
%	Percent
±	Plus Minus Sign
−	Negative Sign
•	Times Dot
/	Division Slash
[•]	Bracket
|•|	Absolute Value
<	Less Than
>	Greater Than
≤	Less Than or Equal
≥	Greater Than or Equal
$\sqrt[n]{\ }$	General Root
log	Common Logarithm
°	Degree Sign
π	Constant Pi
∞	Infinity
i	Imaginary i
e	Exponential e
θ	Theta
sin	Sine
cos	Cosine
tan	Tangent
$\sin^{-1}$	Inverse Sine
$\cos^{-1}$	Inverse Cosine
$\tan^{-1}$	Inverse Tangent

Human Reader Instructions

When to Use the Human Reader Companion Book

This Human Reader Companion Book should be used with students who have been approved for a human reader accommodation. Students approved for this accommodation are those who would benefit from content being read aloud that are not able to access the built-in text-to-speech feature in the online test.

This Human Reader Companion Book provides instructions for the human reader and includes only the assessment content that is appropriate to be read aloud.

This Human Reader Companion Book may **only** be used with students taking the tests in the following formats:

- braille test book (please refer to the comments memo included with the braille test books to identify modifications made for the braille tests)
- large print test book
- standard print test book
- online test form enabled for use with assistive technology other than screen readers

Instructions and some assessment content are presented differently to students depending on whether they are taking a paper or an online assessment. Due to these differences, students taking paper tests and online tests should not be administered the assessment in the same setting when being provided a human reader.

Differences Between the Human Reader Companion Book and the Student's Online or Paper Test

- Assessment content that is not appropriate to be read aloud does **not** appear in the Human Reader Companion Book.
- Page numbers in the Human Reader Companion Book and the standard print or large print test book will not match.
- In some cases, mathematical expressions and scientific notation in the items have been replaced with alternative text descriptions.
- Punctuation marks are not to be read aloud to the student unless specifically noted.
- Images have been removed and replaced with alternate text descriptions.

A Guide to Human Reader Companion Book Formatting

The Human Reader Companion Book includes special formatting to guide the human reader through the script.

Understanding What to Read Aloud to Students

 **and** 

Instructions that should be read to **all** students will appear next to the **paper** and **online** icons.

 Instructions that should be read **only** to students taking **paper** tests will appear next to the paper icon.

 Instructions that should be read **only** to students taking **online** tests will appear next to the online icon.

Alternate Text Descriptions for Images

If the item includes an image, the human reader will see a box in place of the image that includes the alternate text description for the image.

If the answer choices for an item are images, the human reader will see a box in place of the answer options that includes the alternate text description for each image next to the appropriate letter for each answer option.

These alternate text descriptions **should** be read to students.

Notes for the Human Reader

[Notes to the human reader appear in italics and brackets.]

These notes should **not** be read aloud to students.

Human Reader Script for Mathematics

Test Directions

This question sampler allows students to experience the types of items presented on the Utah Aspire Plus assessment. Items on the question sampler may not be representative of the level of content knowledge presented in the assessment. The question sampler should not be used to measure students' content knowledge.

Inside this question sampler are questions about mathematics. Some questions are multiple-choice/multiple-select, and others are text entry.

Multiple-choice/Multiple-select Questions:

- Read the question and then choose the best answer/answers from the answer choices given.
- If you decide to change your answer, erase your first mark completely.
- It is best to mark an answer for every question even if you are not sure which answer is correct.

Text Entry Questions:

- Write your entire answer inside the box that goes with the question.
- Use your best handwriting as your answers will be entered online by a test administrator.

Please Note:

- Unless there is an indication otherwise, assume the following:
  1. Diagrams are NOT necessarily drawn to scale.
  2. Geometric figures are in a plane.
  3. The word "line" indicates a straight line.

4. The word "average" indicates arithmetic mean (for example, 4 is the average of 2, 7, and 3).

- You may use a calculator for any questions you choose. Some questions are best answered without using a calculator.
- Any writing in your questions sampler will NOT be scored. Your answers in the booklet will be entered online by a test administrator.
- Begin working on the question sampler when you are told to do so.

 Test Directions

You are now ready to take the **Math test**. This test is designed to measure your understanding of the Utah Core Standards for **Math**. You may return to these directions from any question by clicking on the Review button, which appears at the top of your screen.

At the top of your screen, you will find buttons for the following tools, from left to right: the forward and back navigation arrows, the Review button, the Bookmark button, the Pointer tool, the Answer Eliminator tool, and a Graphing Calculator. The Text Highlight tool is active but not available on the toolbar. To use the Text Highlight tool, move your cursor to the text you wish to highlight and then click and drag the cursor over the text.

On the top right of your screen, you will find a button for the user drop-down menu. From this menu, you may access the following accessibility tools: Contrast Settings, the Magnifier, and the Line Reader Mask. On some items, you will also have the Enable Answer Masking tool available. The Line Reader Mask allows you to focus on one section of information at a time by dragging the window over the text. The Answer Masking tool allows you to cover the answer choices and focus on one at a time.

If you find that you do not know how to enter your responses, please raise your hand.

Question 1

and

An expression is shown.

a raised to the 4 over 3 power times a raised to the two-thirds power

What is the product of the two factors?

A. a raised to the two-thirds power

B. a raised to the eight-ninths power

C. a squared

D. a raised to the 8 over 3 power

[Pause for students to answer the question.]

Question 2

and

The graph below models a constant decrease in annual licorice sales for Licorice Company, Inc., from 1998 through 2000. The points have been connected to illustrate the trend. Which of the following values is closest to the amount, in dollars, of the decrease per year?

The horizontal axis is titled, year. The axis has a range from 1998 to 2000, increasing in increments of one. The vertical axis is titled, sales in thousands of dollars. The axis has a range from zero to twenty-five, increasing in increments of five. From top to bottom, the coordinates inside the graph are, (1998, 20) (1999, 15) (2000, 10).

A. 5,000 dollars

B. 6,667 dollars

C. 8,333 dollars

D. 10,000 dollars

E. 15,000 dollars

[Pause for students to answer the question.]

Question 3

 **and** 

Mrs. Jones surveys her class about their siblings. In the class, 75 percent of the students have a brother, 82 percent have a sister, and 65 percent have both a brother and a sister.

What is the probability that a student has a brother or a sister?

 Write your answer in the box using the digits 0 through 9, the decimal, or the negative sign. You may use up to seven characters.

[Pause for students to answer the question.]

Question 4

 **and** 

A doctor surveys her patients to determine whether they have had back pain in the last 3 months. She also records whether they are shorter than 6 feet, or 6 feet tall or taller. Her results are summarized in the two-way table below.

The table has three columns and three rows.

From left to right the column headings are,

From left to right the first row reads,

The second row reads,

The third row reads,

Blank cell	**Had back pain**	**Did not have back pain**	**Total**
Shorter than 6 feet	54	81	135
6 feet tall or taller	25	37	62
Total	79	118	197

One of the following conclusions is supported by the data in the table. Which one?

A. People 6 feet tall or taller **always** have a higher frequency of back pain than people shorter than 6 feet.

B. People shorter than 6 feet **always** have a higher frequency of back pain than people 6 feet tall or taller.

C. People 6 feet tall or taller **are more likely than not** to have a higher frequency of back pain than people shorter than 6 feet.

D. People shorter than 6 feet **are more likely than not** to have a higher frequency of back pain than people 6 feet tall or taller.

E. There is no relationship between a person's height and having back pain.

[Pause for students to answer the question.]

Question 5

 **and**

A contingency table for a class is shown.

The title of the table is "Class Data." The table has three columns and three rows.

From left to right the column headings read,

From left to right the first row reads,

The second row reads,

The third row reads,

Blank cell	**Juniors**	**Seniors**	**Total**
Females	6	10	16
Males	9	7	16
Total	15	17	32

What is the probability that a student selected at random is a female given that the student is not a senior?

A. 30 percent

B. 40 percent

C. 50 percent

D. 60 percent

[Pause for students to answer the question.]

Question 6

 **and**

Vanessa and Vinny use two different containers to carry water to a pool.

- Vanessa makes *A* trips to the pool, and Vinny makes *B* trips to the pool.
- Vanessa's container holds *x* gallons of water, and Vinny's container holds *y* gallons.

Create an expression that represents the average number of gallons of water carried every trip.

Write your answer in the box. You may use numbers, letters, or symbols from the High School Mathematics Symbol List.

The equation tool shows mathematical functions.

[Pause for students to answer the question.]

Question 7

and

A function is given.

f of x equals $7x$ plus 9

Complete the table to show output values for a linear function g of x that has a greater rate of change but the same *y*-intercept as f of x.

Write your answer in the boxes using the digits 0 through 9, the decimal, or the negative sign. You may use up to seven characters.

and

The table has two columns and four rows.

From left to right the column headings read,

From left to right the first row reads,

The second row reads,

The third row reads,

The fourth row reads,

x	***g* of *x***
0	blank
1	blank
2	blank
3	blank

[Pause for students to answer the question.]

Question 8

and

Ryan and Tomas walked to school and then to the park, as described below:

Ryan walked 2.3 miles from his home to meet Tomas at school.

Tomas walked 2.7 miles from his home to meet Ryan at school.

Once they were at school, the boys walked *x* miles to the park and then *x* miles back to the school.

From top to bottom, left to right, the figure is labeled, Ryan's home, 2.3 miles, school, *x* miles, park, Tomas's home, *x* miles, 2.7 miles.

The sum of the distance Ryan walked and the distance Tomas walked was at least 15 miles but not more than 21 miles. One of the following is the graph of the possible values of *x*. Which one?

A. The graph ranges from zero to 22, increasing in increments of two.

B. The graph ranges from zero to 22, increasing in increments of two.

C. The graph ranges from zero to 22, increasing in increments of two.

D. The graph ranges from zero to 22, increasing in increments of two.

E. The graph ranges from zero to 22, increasing in increments of two.

[Pause for students to answer the question.]

Question 9

 **and** 

A system of linear equations is given.

$3x$ plus $2y$ equals 7 *[pause]* $2x$ minus $3y$ equals negative 4

What are the x- and y-values of the solution to the system?

 Write your answer in the boxes using the digits 0 through 9, the decimal, or the negative sign. You may use up to seven characters.

 x equals blank

y equals blank

[Pause for students to answer the question.]

Question 10

 **and** 

The function f of x is shown.

f of x equals $2x$ cubed minus x squared plus one-half x

Let g of x equal f of two-thirds x.

What is g of x in terms of x?

Write your answer in the box. You may use numbers, letters, or symbols from the High School Mathematics Symbol List.

The equation tool shows mathematical functions.

[Pause for students to answer the question.]

Question 11

and

Select all the numbers that could be the sum of a rational number and an irrational number.

A. 4.076923076923...

B. 5.236067977567...

C. 3.116666666666...

D. 9.605555127513...

E. 6.714285714285...

F. 2.718281828582...

[Pause for students to answer the question.]

Question 12

and

An equation of the line passing through the points negative 5 comma negative 2 and 3 comma 4 in the standard x comma y coordinate plane can be written in the form ax plus by equals c, where a, b, and c are integers with no common factor other than 1, and a is positive.

What is the value of a?

Write your answer in the box. You may use the digits 0 through 9, the decimal, or the plus sign. You may use up to two characters.

a equals blank

[Pause for students to answer the question.]

Question 13

and

On a given day on a certain poultry farm, the relative frequencies of chickens, ducks, and geese that laid an egg or did not lay an egg are given in the table below. Two of the relative frequencies are given by letters.

The table has three columns and three rows.

From left to right the column headings read, Blank cell, Laid an egg, Did not lay an egg, Total

From left to right the first row reads, Chickens, a, 0.33, 1.00

The second row reads, Ducks, 0.45, 0.55, 1.00

The third row reads, Geese, 0.48, b, 1.00

If it can be determined, what is the sum of the values of a and b in this table?

A. 0.19

B. 0.67

C. 1.19

D. 1.80

E. Cannot be determined from the given information.

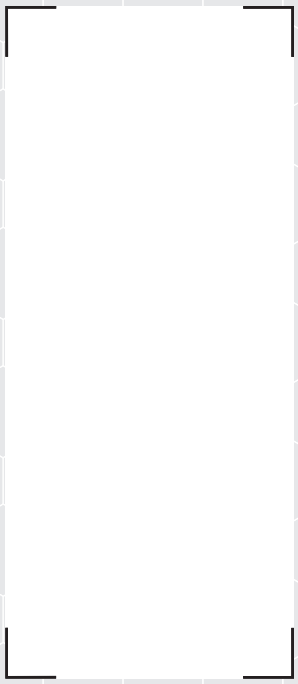
[Pause for students to answer the question.]

End of test. If you finish, you may go back and check your work.

End of Section 1

Use the **Review** button above to go back and review your answers. When you are done, use the **Submit Final Answers** button below to submit your answers.

Pearson



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