



## Great Resources. Great Results.

### PERFORMANCE TASKS FOR FRACTIONS – Where to Start?

Tasks taken from *Revealing What Students Think: Diagnostic Tasks for Fractional Numbers*

Task Name	Purpose of the Task	Suitable for Students Aged
1. Licorice	<p>Part One: The purpose is to find out whether students understand that a half means one out of two parts, where the two parts are of equal quantity. Many young students will share each strip of licorice into two lengths and not attend to the equality of the shares.</p> <p>Part Two: This part will show whether students have generalized their understanding of halves and use the word 'half' to mean one piece out of two equal-sized pieces.</p>	5-9
2. Zoo Animals	<p>The purpose of this task is to find out whether students have generalized the idea that a half means one out of any two equal-sized parts. Often students think of a half as being one part of a continuous whole – for example, one part of a cake that is cut into two equal pieces. They may not have generalized this idea to include different wholes, such as the whole being a collection of items – for example, a bowl of fruit or a pile of jellybeans.</p>	7-9
3. Find a Half	<p>The purpose of this task is to find out whether students have generalized the idea that a half means one out of any two parts, where the two parts are of equal quantity, and that the half can be half of one object or half of a collection of objects. The task will also show whether students have the preconception of a half as one out of any sized two pieces.</p>	7-10
4. Feeding the Rabbits	<p>The purpose of this task is to find out whether students can use continuous halving to make four equal-sized portions, use up the whole item, and name the resulting portion as one quarter.</p>	7-10



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5. Sharing Bananas	This task will show whether students are able to share three items between two people, by giving each person one item each and then cutting the remaining item into two equal-sized portions.	7-10
6. Walking to School	The purpose of this task is to find out whether students are able to use continuous halving to work out a fractional amount and to use the associated symbolic form.	9-11
7. Which Is Bigger?	This task will show whether students know that $\frac{1}{4}$ is smaller than $\frac{1}{3}$ because the more portions something is split into, the smaller each portion is.	9-11
8. Cooking at Home	This task will show whether students know that $\frac{1}{4}$ is smaller than $\frac{1}{3}$ because the more portions something is split into, the smaller each portion is. It will also show whether they are able to consider the size of the numerator and the denominator when they are comparing $\frac{2}{3}$ and $\frac{3}{4}$ .	9-11
9. Fruit Bowl	The purpose of this task is to find out whether students are able to think of a collection of apples and pears as one whole collection of fruit and name the fraction of apples as two fifths.	9-11
10. Sharing Lollies	This task can be used to find out whether children can use the fractions a third, two thirds and a quarter to describe parts of a whole when the whole is a collection of items.	10-12
11. Counting by Fractions	This task can be used to find out whether children are able to count by fractional amounts, particularly halves and quarters.	9-11



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Task Name	Purpose of the Task	Suitable for Students Aged
12. Broken Eggs	The purpose of this task is to find out whether students can use written symbols to name less common fractions within collections of items, particularly $\frac{5}{12}$ , $\frac{7}{12}$ and $\frac{3}{12}$ . It will also show whether they can add the fractions $\frac{5}{12}$ and $\frac{3}{12}$ in a practical situation.	9-11
13. Naming Fractions	The purpose of this task is to find out whether students can use written symbols to name fractions including $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ , $\frac{1}{16}$ and $\frac{1}{6}$ . Often students are able to label and name fractions when given pre-drawn shapes that have been evenly partitioned and shaded but are not able to name the fractions when the shapes have uneven partitions.	9-12
14. Running a Race	The purpose of this task is to find out whether students are able to count by eighths and thirds beyond 'one' to solve a problem. It may also show evidence of whether students can calculate with fractions.	9-11
15. After School	This task can be used to find out whether students have an understanding of simple equivalent fractions like $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$ .	9-11
16. Who Knows Best?	This task will show whether students have an understanding of fractions as quantities or whether they have more of a rote understanding that does not allow them to think of the fraction $\frac{3}{4}$ in this situation in practical terms. It may also show evidence of whether students can calculate with fractions.	9-11
17. Cookies	This task will show whether students are able to name fractions of a collection, eight twenty-fourths and six twenty-fourths, and some fractions that are equivalent to these.	10-12



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Task Name	Purpose of the Task	Suitable for Students Aged
18. Toy Cars	This task can be used to find out whether students are able to solve a problem when given the number of objects for $\frac{3}{4}$ of a collection as 24, and have to find out how many objects are in the whole collection.	10-12
19. Three Quarters of a Pie	The purpose of this task is to find out whether students are able to work out equivalent fractions to find a quantity of pie – that is, one sixth of three quarters of the pie.	11-13
20. Jumping Competition	Use this task to find out whether students can compare the size of fractional numbers $\frac{1}{3}$ and $\frac{1}{4}$ on a number line and/or count in units of a third and a quarter.	9-11
21. How Long Is the Snake?	Part One of this task will show whether students are able to read fractions on a number line, and to use this to combine fractions and to compare the size of fractions.  Part Two of the task will show whether students can use a number line to accurately draw creatures of particular fractional lengths ( $\frac{5}{8}$ , $2\frac{1}{4}$ ), and to compare the two fractions $\frac{2}{3}$ and $\frac{3}{4}$ .	10-13
22. Number Lines	The purpose of this task is to find out whether students are able to think of fractions as numbers rather than just as quantities and to locate them on a number line.	10-12
23. Circle the Bigger	The purpose of this task is to find out whether students are able to compare fraction numbers using benchmark fractions – for example, $\frac{4}{9}$ is less than a half, or $\frac{7}{8}$ is close to one.	10-12



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Task Name	Purpose of the Task	Suitable for Students Aged
24. Pocket Money	This task can be used to find out whether students consider the size of the whole when asked to compare fractions.	10-12
25. Party Food	This task is designed to find out whether students are able to work out shares in a situation where there are more shares required than objects – for example, more children than pieces of garlic bread.	10-12
26. Brownies – Yum!	The purpose of this task is to find out whether students are able to see the relationship between fractions and division.	11-13
27. Doing Homework Together	The purpose of Part One is to find out whether students have a sense of the size of the fraction $\frac{1}{8}$ and of the decimal numbers 0.8 and 0.125 and know that $\frac{1}{8}$ is a different name for 0.125.	11-13
28. Visit to the Zoo	This task will show whether students are able to use fractions to express ratio relationships and use these to work out a larger quantity in a situation involving a collection – that is, a number of people. The word 'ratio' is used deliberately here to see whether they are familiar with this term.	11-13
29. Making Lemonade	This task will show whether students are able to use fractions as ratios to work out a larger amount of liquid from a smaller one.	11-13
30. 'More' Game	The purpose of this task is to find out whether students have an understanding of the relationships between fractions, percentages and decimals. You will also get more information about students' understanding of equivalent fractions.	11-13