Worksheet
(Based on the Tricky Truth about Visualising Fractions)

Kshama Chakravarthy

Here is a worksheet that teachers can use to check their students' understanding of fractions, in the context of the accompanying article. It may be used for students in classes 4, 5, 6 and 7 as appropriate, to assess their understanding. The pre-requisite is the idea of a whole and how the fraction changes depending on the whole that is considered. This is to be explained to students before they attempt the worksheet so that students don't feel overwhelmed by the questions.

1. **Draw your own "whole" and shade $\frac{1}{4}$ of it.**

2. **Draw a whole such that:-**

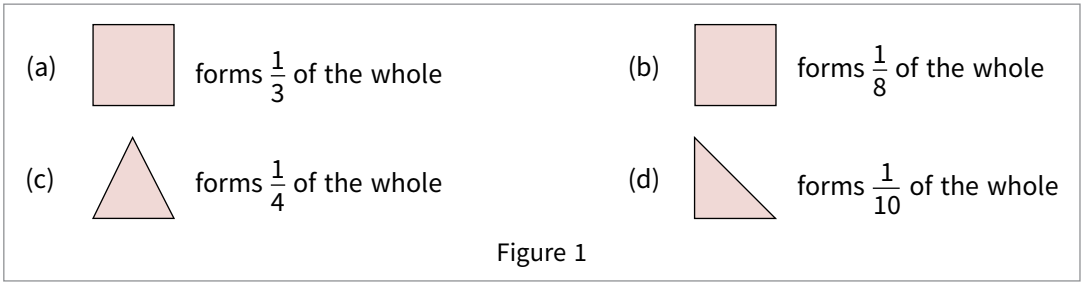


Figure 1

3. **Read the statements below.**

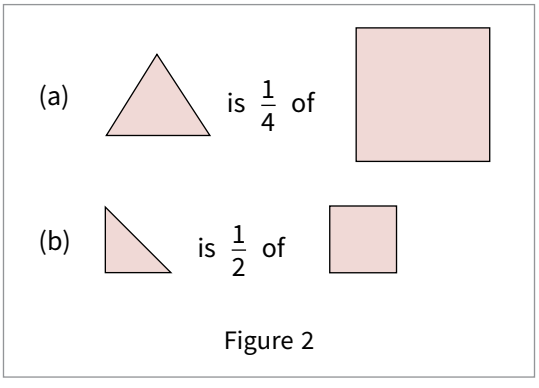


Figure 2

Does this mean that $\frac{1}{4}$ is larger than $\frac{1}{2}$? Explain the situation/Justify your answer.

4. The shaded portion shown in Figure 3 represents $\frac{7}{6}$ of a whole; choose the whole from the options in Figure 4.

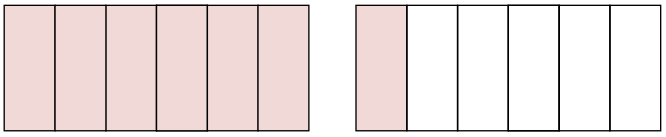


Figure 3

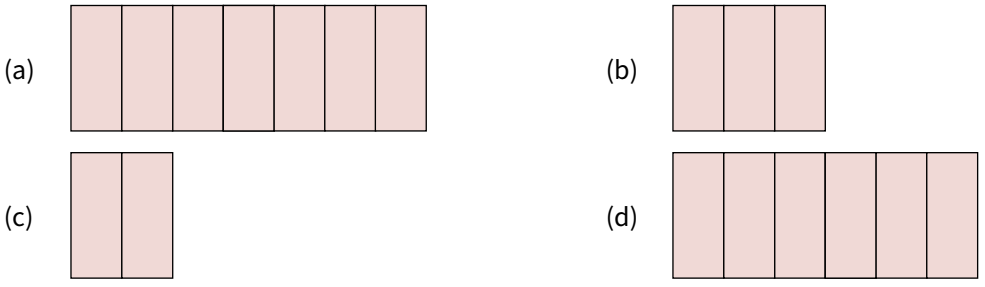


Figure 4

5. Look at Figure 5 and answer the questions that follow, with respect to this image.

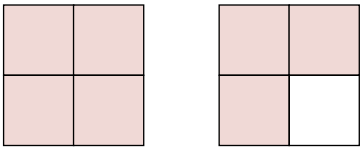


Figure 5

(a) If the shaded portion shown in Figure 5 represents $\frac{7}{2}$ of a whole, choose the correct option for the whole from Figure 6.

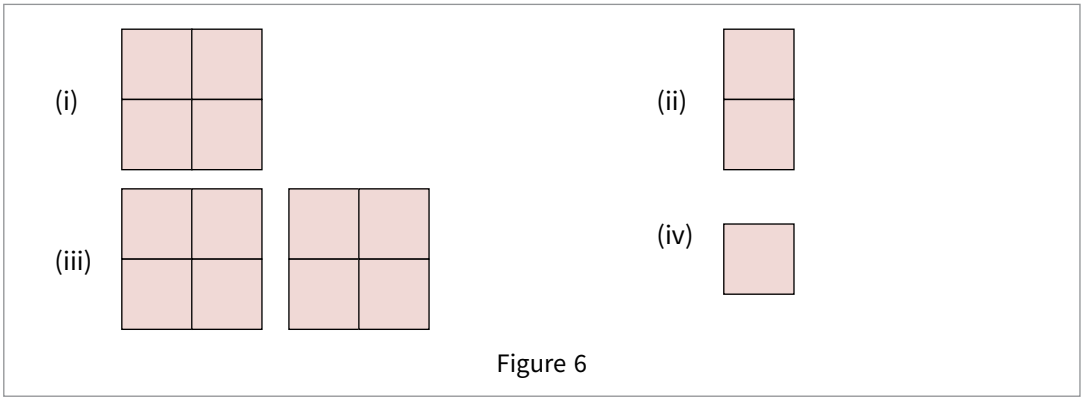


Figure 6

(b) If the shaded portion in Figure 5 represents $\frac{7}{8}$ of a whole, choose the correct option for the whole from Figure 7.

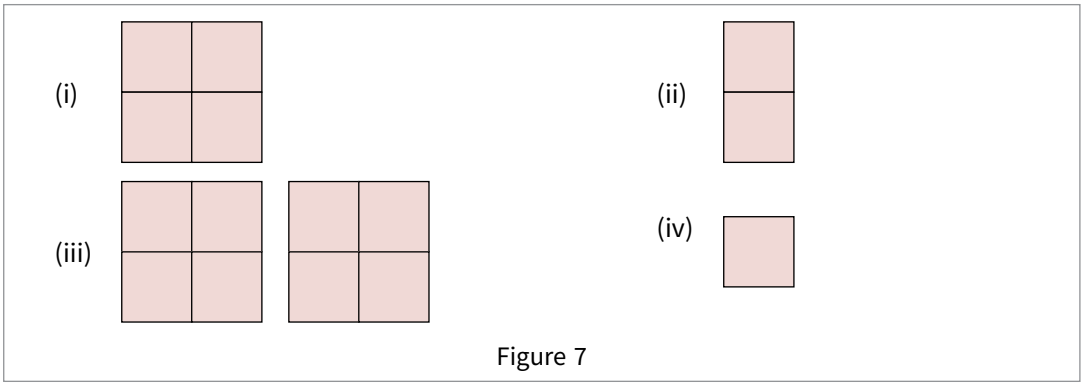


Figure 7

(c) If the shaded portion in Figure 5 represents $\frac{7}{4}$ of a whole; choose the correct option for the whole from Figure 8.

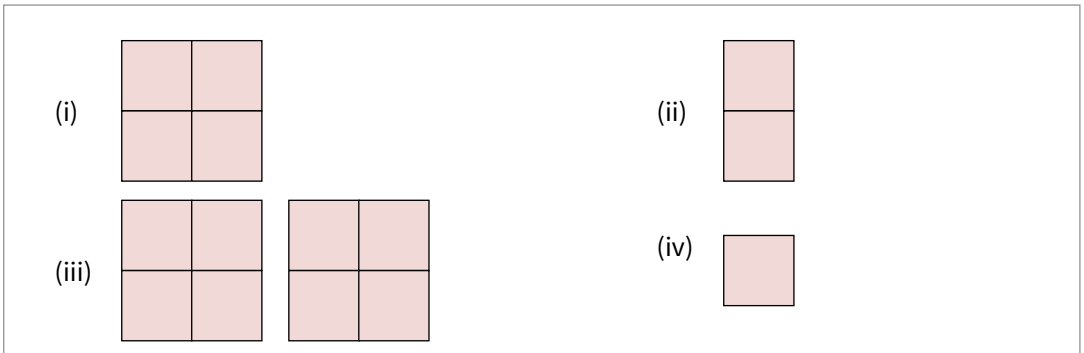


Figure 8

(d) If the shaded portion in Figure 5 represents 7 of a whole, choose the correct option for the whole from Figure 9.

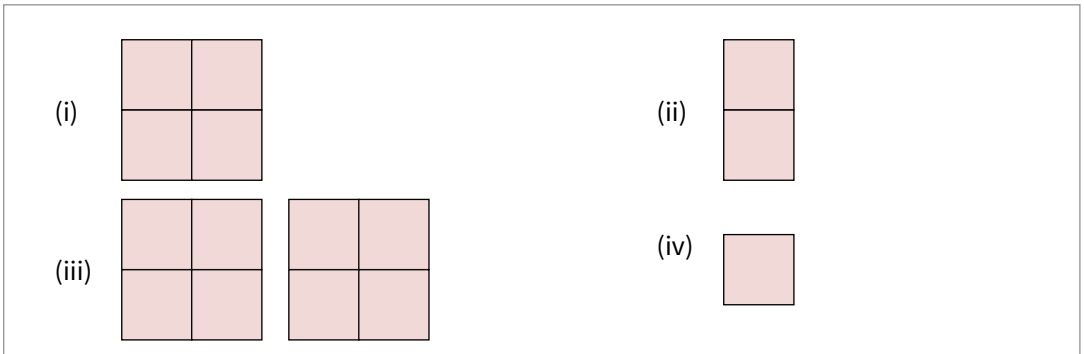
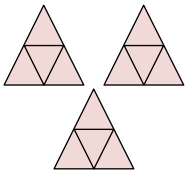


Figure 9

6. If  **is a whole which of the following represents $\frac{3}{4}$?**

(a) 

(b) 

(c) 

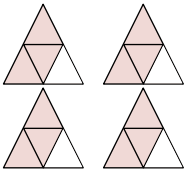
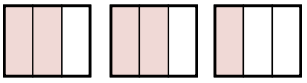
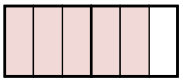
(d) 

Figure 10

7. If  **is a whole which of the following represents $\frac{5}{3}$? Note: Tick as many correct options as you see.**

(a) 

(b) 

(c) 

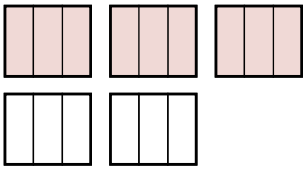
(d) 

Figure 11

Teacher Notes

Q1: This allows students to be creative and make their own whole, and thereby also see for themselves that it is easier to divide regular shapes into fractions versus irregular shapes.

Q2: This question tests their understanding of fractions, and may also help them see that the shape of the whole can be different even though the fractional unit is the same. For example, in question (a), the whole can look like a horizontal or vertical row of 3 squares, or an L-shaped whole.

Q3: The importance of a whole comes out beautifully through this question. When comparing two fractions it is assumed that the fractions being referred to are of the same whole, but when a contradictory statement is made, it forces one to think when this can be true. Of course in this question, the image helps the student arrive at the answer. If the wholes being compared are different, the value of the fraction alters.

Q4: Questions usually give the whole and ask for the fraction that the shaded part represents. There is a twist here where the fraction is given and the student has to identify the whole. A good understanding of fractions will enable the student to work backwards to arrive at the answer.

Q5: This question really tests the understanding of fractions when the whole is different each time. The figure is the same, the shaded portion is the same, and yet, with a different consideration of the whole each time, the fraction that the shaded portion represents changes.

Q6: This is a standard/ regular question, with the whole being made explicit so as to not be ambiguous.

Q7: This question is slightly more challenging because it involves an improper fraction to be identified. A student who is unsure about the answer can be confused looking at the options. It requires them to identify a third of the whole and then look at 5-thirds.

KSHAMA CHAKRAVARTHY is an educator. She holds a master's degree in Mathematics from IIT Madras and a master's in Education from Azim Premji University. With over 15 years of experience in math education, she has worked in areas like content development, teaching, and teacher training, as well as conducting student interviews and creating assessments. Passionate about nurturing young minds, Kshama loves spending time with toddlers and enjoying nature. She can be reached at kshamagc@gmail.com