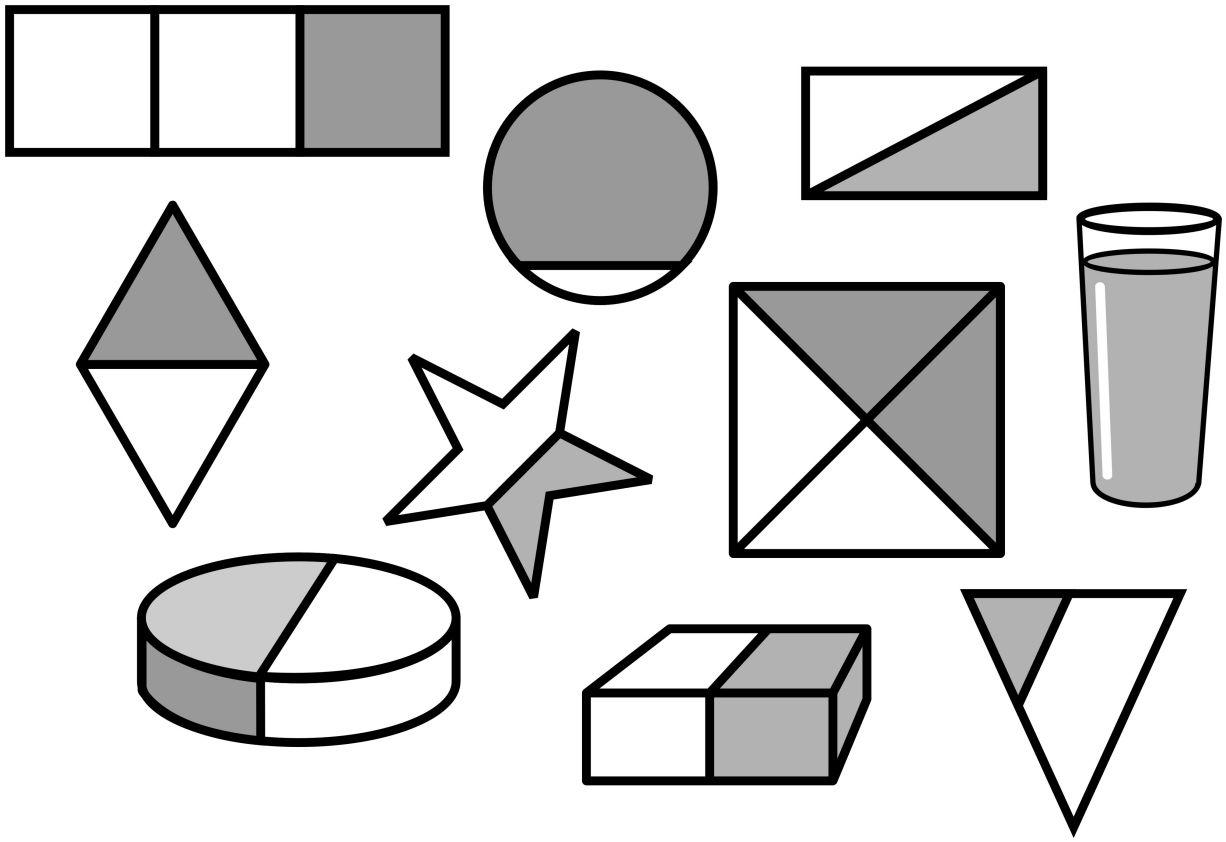
Diagnostic test for students

Student Name: Date:

This test is designed to help your teachers work out what you really understand about fractions and where you are stuck. Please have your best guess at what you think the answers are to each of the questions. Please also tick the box to indicate how sure you are and add a comment to explain when you get stuck.

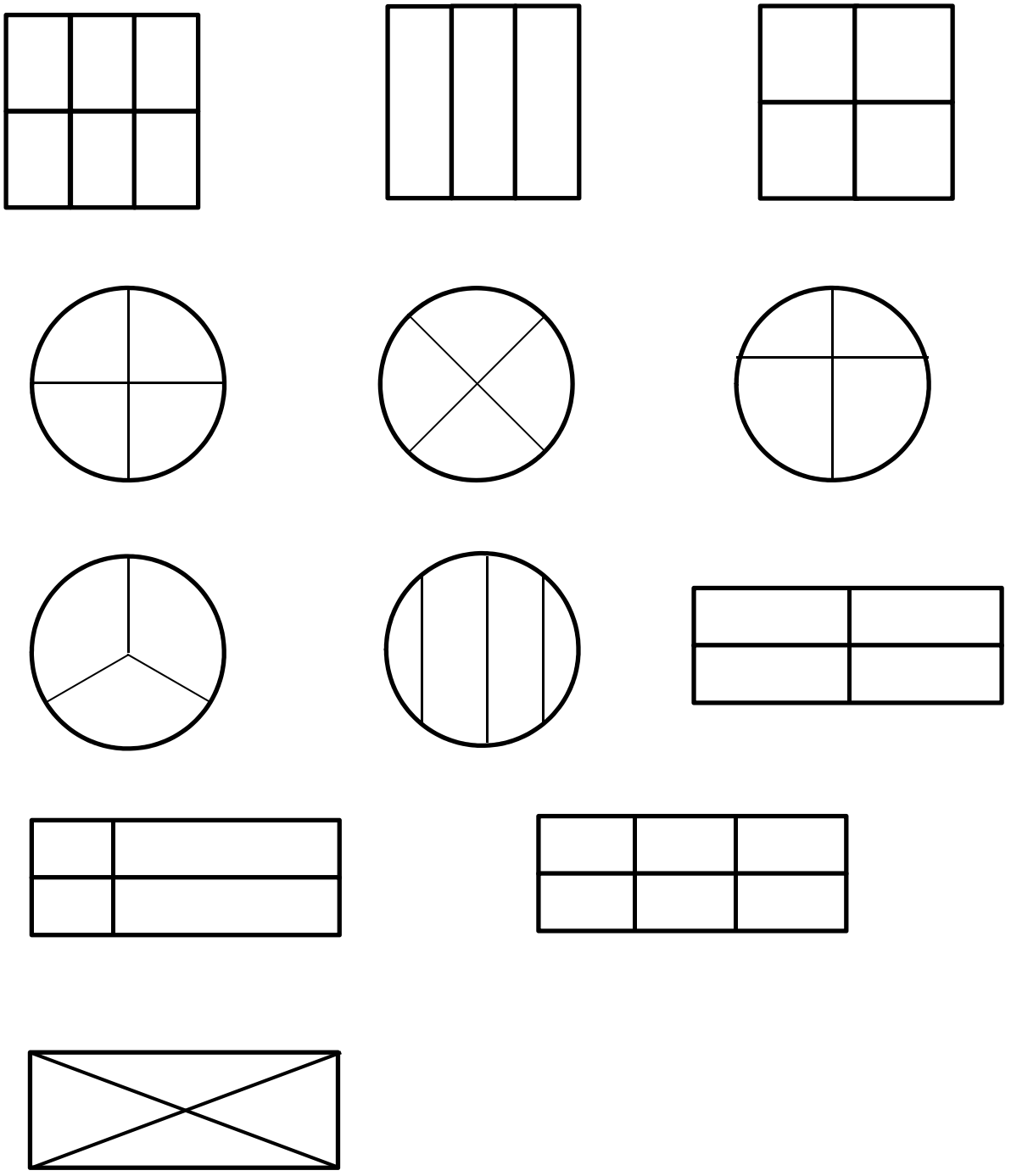
1. Which of the following pictures do you think represent one half?
    - Tick all the pictures that you think are right.
    - Cross all the pictures you think are wrong.
    - Put a question mark on all the pictures that you are not sure about.



Circle the pictures that you found tricky. What made them hard for you?

2. Which of the following pictures do you think represent quarters?

    - Tick all the pictures that you think are right.
    - Cross all the pictures you think are wrong.
    - Put a question mark on all the pictures that you are not sure about

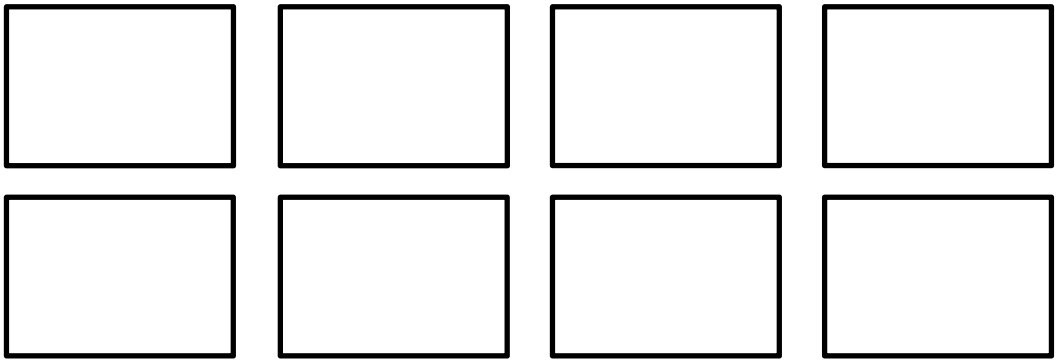


Circle the pictures that you found tricky. What made them hard for you?

3. The rectangles below represent pieces of A4 paper. Draw one line on each to show one way to cut the paper into **halves**.

   Try to come up with as many different ways of making halves as you can using the different rectangles. Make sure that they are definitely halves and not something else. Feel free to experiment to see what works.

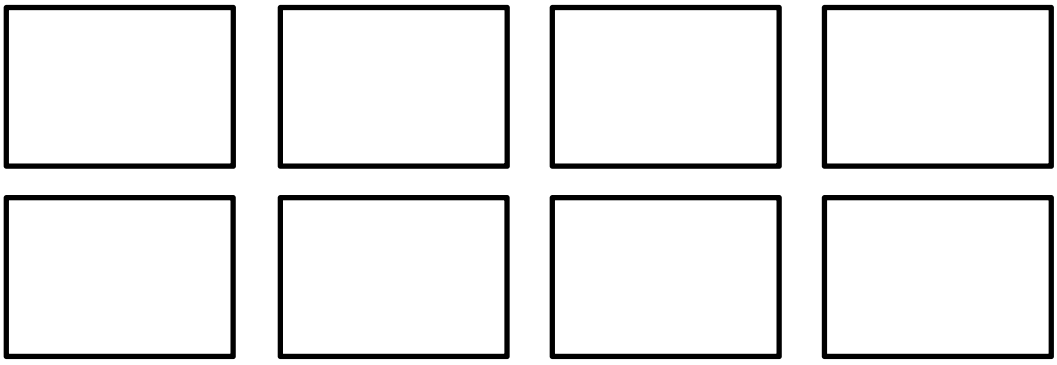
   At the end, tick all the halves that you think are right. Cross out all the ones you think are wrong. Put a question mark on all the halves that you are not sure about.



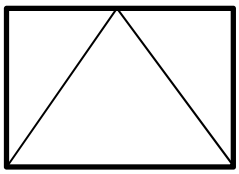
4. The rectangles below represent pieces of A4 paper. Draw two lines on each to show one way to cut the paper into **thirds**.

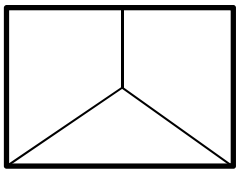
   Try to come up with as many different thirds as you can using the different rectangles. Make sure that they are definitely thirds and not something else. Feel free to experiment to see what works.

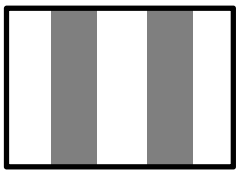
   At the end, tick all the thirds that you think are right. Cross out all the ones you think are wrong. Put a question mark on all the ones that you are not sure about.



5. Write the **names** of each of the fractions drawn below in **words and symbols**. Put a cross next to any that you think can't be done. Put a question mark next to any that you think have a real fractions name or symbol but you don't know what it is.







6. Find one half, one quarter and one third of each of the following numbers if possible. Write your answers on the line. If you can't do it, put a cross next to the number and explain why you think it can't be done.

   10:

   24:

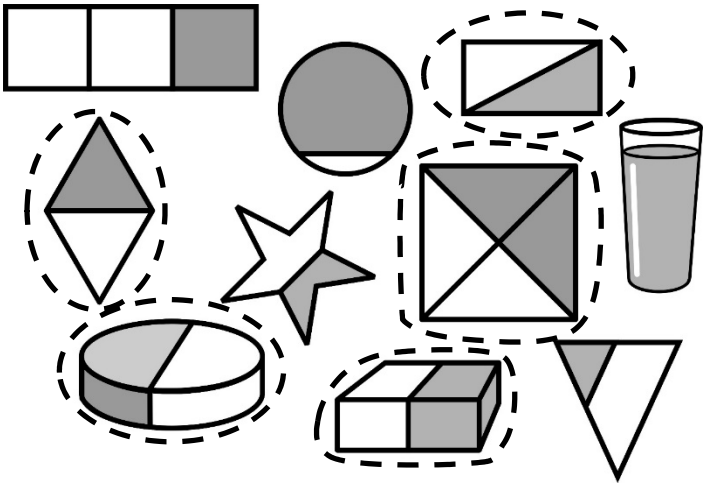
   9:

   8:

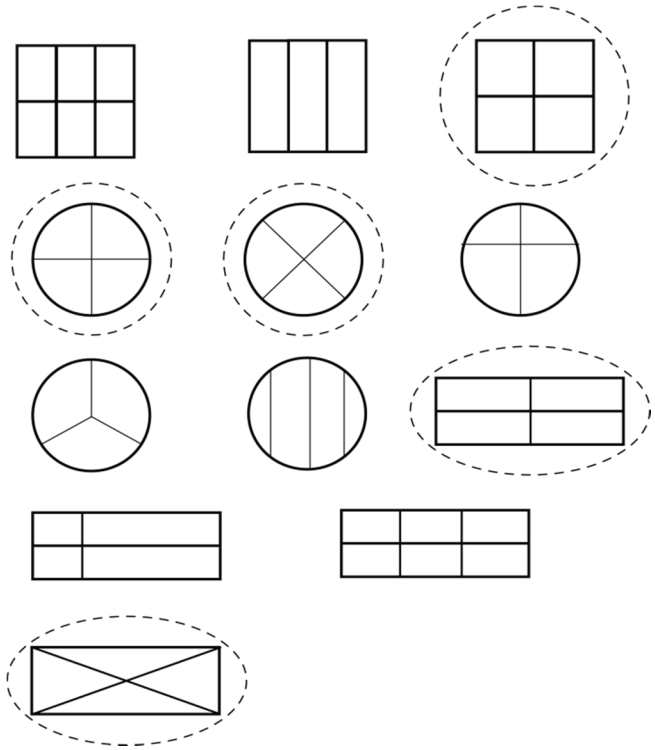
7. Which questions did you find trickiest on this test?

Interpreting the results of the Diagnostic Test:

Question 1: The shapes that are circled show half. The shapes that are not circled do not show half. If students got any of these wrong, you need to begin at lesson 1. If students indicated confusion with any of these you also need to begin at Lesson 1. If not, continue to the next question.



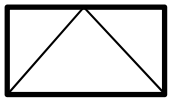
Question 2: The shapes that are circled show quarters. The shapes that are not circled do not show quarters. If students answered any of these incorrectly, you need to begin at Lesson 8. If students indicated confusion with any of these you also need to begin at Lesson 8. If not, continue to the next question.



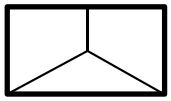
Question 3: Any cut that goes through the mid-point of the rectangle will make a half. If students only had a few answers for this one or have answers that are not correct, you need to start at Lesson 1. If not, continue to the next question.

Question 4: If students have drawn pieces that are not the same size, you need to start at Lesson 6. If not, continue to the next question.

Question 5: The answers are written beside each fraction below. If students answered any of these incorrectly you should start at Lesson 6.



This shows one half and two quarters.



This does not show thirds. It actually shows two lots of three eighths (side trapeziums) and one quarter (bottom triangle). We would not expect students to know this, but they should know that it is not thirds.

This shows two fifths grey and three fifths white. Watch out for students who think this is $^{2}/_{3}$ rather than $^{2}/_{5}$ or $^{3}/_{5}$. Watch out for students who think these are quarters.

This does not show fractions. Watch out for students who think that this is ¾.

Question 6: The answers are shown below. If students get stuck with these, teach from Lesson 12 onwards. If they get stuck on the answers with decimal numbers still start at Lesson 12.

- 10: ½ of 10 is 5 ¼ of 10 is 2.5 or 2 ½ $^{1}/_{3}$ of 10 is 3.333 or 3 and $^{1}/_{3}$
- 24: ½ of 24 is 12 ¼ of 24 is 6 $^{1}/_{3}$ of 24 is 8
- 9: ½ of 9 is 4.5 or 4 ½ ¼ of 9 is 2.25 or 2 ¼ $^{1}/_{3}$ of 9 is 3
- 8: ½ of 8 is 4 ¼ of 8 is 2 $^{1}/_{3}$ of 8 is 2.67 or 2 and $^{2}/_{3}$