

Time and Money

- ◇ This document is intended for teachers, not students. Obviously, only use questions that are appropriate to your grade level.
- ◇ If you create worksheets, send me a copy!
- ◇ It may be better to do **Hours** before **Minutes**. Also note that all the questions about minutes could be asked about seconds. That would have the advantage that you can actually see the seconds hand moving, which may be helpful for some kids.
- ◇ When asking students to shade in a fraction, also insist that they write the corresponding numbers or equations.

The first three sections below are based on the **Time** sheet.

Minutes

Keep in mind how the minutes hand moves around a clock as you answer these questions.

- ◇ Write the numbers 1-12 in the usual places on one of the lower circles.
- ◇ Write the number of minutes with 0 at the top, 5 where the 1 usually is, and so on, ending up with 55 where the 11 usually is.
- ◇ Look at the circles in the upper row. How many minutes are there in each section?

You can ask questions like “Shade in from 10 minutes before the hour to 20 minutes after. How many minutes is that?” If the answer is greater than 60 minutes, you’ll need more than one circle.

Hours

Keep in mind how the hours hand moves around a clock as you answer these questions.

- ◇ Write the numbers 1-12 in the usual places on one of the lower circles.
- ◇ Look at the circles in the upper row. How many hours are there in each section?

The next two questions could also be answered using just one circle each. With younger students, that may be a better choice for any question that involves less than 12 hours. Also, you can ask questions like “Shade in 8 o’clock to 3 o’clock. How many hours is that?”

- ◇ Choose two of the lower circles, one next to the other, and label them AM and PM. Shade in a school day. How many hours is that?
- ◇ Choose two of the lower circles, one next to the other, and label them PM and AM. Shade in a night’s sleep. How many hours is that?
- ◇ How many circles would it take to show a whole weekend? (From noon Friday to noon Monday.) Use color to show different activities during that weekend: school on Friday afternoon and Monday morning, sleep time, meals, activities during weekend days. How much time total for different activities?)

Months

- ◇ Write the names of the months around one of the lower circles.
- ◇ Look at the circles in the upper row. How many months are there in each section?
- ◇ Choose one of the circles at the top to label with the names of the seasons. (Approximately!)
- ◇ Choose two of the lower circles, one next to the other, and declare they represent two consecutive years (e.g. next year, and the year after). Shade in the school year.

Money

Use the **100** sheet for this. Each circle represents a dollar.

- ◇ Shade in a quarter, a dime, a nickel in appropriate circles.
- ◇ Shade in different ways to make a dollar in the first row. For example, $50 + 50$ in the first circle, or $40 + 60$ on the fourth one.
- ◇ For the bottom two rows, find different ways to make change for a dollar.

Time as Decimals

One way to introduce converting time from hours and minutes to decimals is by looking at the **Time** and the **100** sheets at the same time.

- ◇ Start by labeling the circles on the **100** sheet with the decimals corresponding to the slices. For example, 0.5 for the first one, and 0.2 for the fourth.
- ◇ Which slices are the same size in both sheets? Label them in both sheets with a decimal and a number of minutes. (For example, 30 minutes and 0.5 for the first circle.)
- ◇ On circles that do not match, ask for approximations. For example, on the **Time** sheet, what is an approximate decimal for the fourth circle? On the **100** sheet, how many minutes for the fourth circle?
- ◇ Using the fact that 3 minutes is 0.05, (from the bottom row on the **100** sheet,) you can easily make many conversions.

Of course, this is just an introduction, but hopefully it will help provide some meaning for students who don't get that from an algorithm using proportions. (Even students who can carry out the algorithm may not have the gut-level understanding provided by these images.)