

Your Name: _____ Room: _____

Grade: _____ Teacher: _____

Montlake Math Challenge
Montlake Elementary School
January 31, 2008

Instructions: Try to solve as many of the following problems about “clock math” as you can.

Homework: Don't forget to let us know if you're interested in participating in the Math is Cool contest by **next week**.

Problem 1: Answer the following questions about a normal 12-hour clock. Don't worry about AM or PM.

Problem 1a: What time will the clock read 4 hours after 1:00?

Problem 1b: What time will the clock read 5 hours before 7:00?

Problem 1c: What time will the clock read 8 hours after 4:00?

Problem 1d: What time will the clock read 7 hours after 6:00?

Problem 1e: What time will the clock read 10 hours after 4:00?

Problem 1f: What time will the clock read 12 hours after 11:00?

Problem 2: Answer these questions about a 12 hour clock. Again, don't worry about AM or PM.

Problem 2a: What time will the clock read 4 hours after 3:00?

Problem 2b: What time will the clock read 16 hours after 3:00?

Problem 2c: What time will the clock read 28 hours after 3:00?

Problem 2d: What time will the clock read 40 hours after 3:00?

Problem 2e: What time will the clock read 8 hours before 3:00?

Problem 2f: What time will the clock read 20 hours before 3:00?

Problem 2g: What time will the clock read 100 hours after 3:00?

Problem 2h: What time will the clock read 220 hours after 3:00?

Problem 2i: What do you notice about your answers to problems 2a – 2h? Why do you think this is the case?

Problem 3: Answer these questions about a standard 12 hour clock.

Problem 3a: What time will the clock read 45 hours after 3:00?

Problem 3b: What time will the clock read 51 hours before 3:00?

Problem 3c: What time will the clock read 17 hours after 5:00?

Problem 3d: What time will the clock read 745 hours after 11:00?

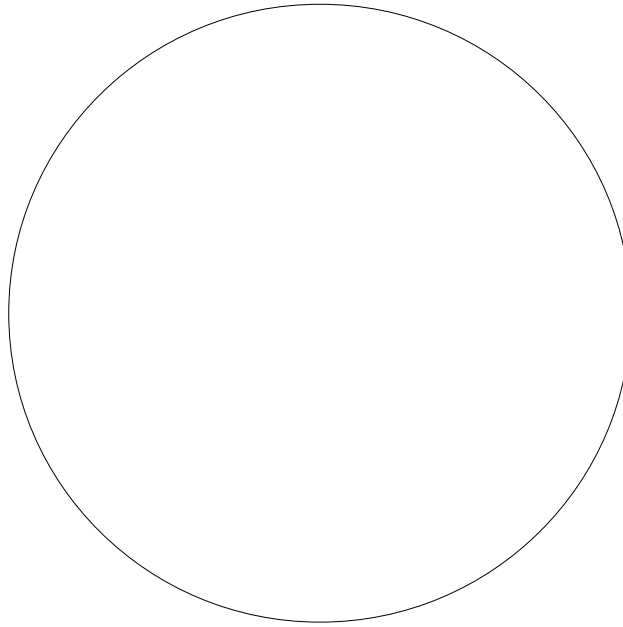
Problem 3e: What time will the clock read 875 hours before 7:00?

Problem 3f: What time will the clock read 1224 hours before 12:00?

Problem 3g: What time will the clock read 17 hours after the time it shows 19 hours before 4:00?

Problem 3h: What time will the clock read 375 hours after the time it shows 985 hours after 6:00?

Problem 4: Pretend that you have a 5-hour clock instead of a 12-hour clock. Draw the face of a 5-hour clock below. Instead of having times 1:00, 2:00, 3:00, 4:00, and 5:00, let's write the times as 1,2,3,4, and 0 (instead of 5)



Problem 4a: What time will the clock read 4 hours after 1?

Problem 4b: What time will the clock read 9 hours after 1?

Problem 4c: What time will the clock read 19 hours after 3?

Problem 4d: What time will the clock read 18 hours before 2?

Problem 4e: What time will the clock read 42 hours after 0?

Problem 5: We can use the ideas in problems 1-4 to help us solve similar problems.

Problem 5a: What day of the week will it be 4 days from today?

Problem 5b: What day of the week will it be 16 days from today?

Problem 5c: What day of the week will it be 43 days from today?

Problem 5d: What day of the week will it be 100 days from today?

Problem 5e: What day of the week will it be 91 days from yesterday?

Problem 5f: What day of the week will it be 75 days after 4 days ago?

Problem 5g: What day of the week was it 81 days before next Wednesday?

Problem 5h: If my birthday was on a Monday last year, what day of the week will it be on this year? (Remember: 2008 is a leap year!)

Problem 5i.* Horatio was born on a Tuesday in 2003. On what day of the week will his 12th birthday fall?

Problem 6: Anything you buy at the store has a bar code on it. A bar code always has a 12 digit number written beneath it. This is an item's Universal Product Code (UPC). The first six digits of the UPC identify the manufacturer of the item, and the next five digits identify the product you are buying. The last digit is a “check digit.” Sometimes when an item cannot be scanned at the cash register, the cashier has to enter the UPC into the computer by hand. This “check digit” is used to make sure that the cashier did not make a typo while entering the UPC into the computer.

Here's how the check digit works: This is a bar code for chicken noodle soup.



To check that this is a “good” UPC code, we can use the check digit, which is the last digit of the UPC – in this case, the check digit is 4.

Now we add 3 times the first number of the UPC plus the second number of the UPC plus 3 times the third number plus the fourth number, and so on, alternating multiplying by 3 and by 1. Doing this we add up the first 11 numbers of the UPC. If we add the check digit to the resulting number, we should get a number that is divisible by 10.

Exercise 1: Check that this is a valid UPC code.

Exercise 2: You are at the store buying some chicken noodle soup, and the cashier enters the UPC as 063211104314. Did the cashier make a mistake?

Exercise 3: Check that the following is a valid UPC:



Exercise 4: What should the check digit be in this UPC to make it valid?

