Theme Problems 1-8 solutions:

1. **Sunday**. There are 30 days in June, 31 days in both July and August, 30 days in September, and 31 days in October. From June 21st to the end of the month there are 9 days left. Then we add all the days in the intervening months: 9 + 31 + 31 + 30 + 31 = 132. Adding 12 days in November yields 132 + 12 = 144. We divide the total number of days by 7 and find the remainder: 144/7 = 20 4/7. So from June 21st to November 12th, 20 weeks and 4 days have passed. Thus, Ryan Gosling's birthday that year was on a Sunday.

2. **12**. We set up two equations and solve:

   number of Barbie tickets: x
   number of Oppenheimer tickets: y

   $$x + y = 20$$
   $$40x + 50y = 880$$

   $$40x + 50(20 - x) = 880$$
   $$x = 12\,.$$

3. **64 kg**

4. By trigonometry, **12 minutes or 0.2 hours or ⅕ of an hour**

5. **5.55**

6. 384*62=23808; a=3, b=8, c=2; **13**

7. Plug and chug, you get **19**. The trick is to not reduce any fractions and multiply things out until the very last step. It is very doable without a calculator.

8. **3**. See distribution below. It can be shown that the following is unique.

	Hammers	Barbies	Sickles	Total Personal	Personal Limit
Jean	12	0	0	24	24
Kitty	3	4	0	23	23
Ruth	3	0	8	19	19
Total	18	4	8		
	Hammers	Barbies	Sickles		
Jean	2	1	1		
Kitty	1	5	1		
Ruth	1	1	2		