1. (a) \(3\frac{1}{2} \div \frac{1}{2} \approx 6.67\)  
(b) \(2.1 \cdot 2.38 = 4.998 \approx 5\)  
(c) \(\frac{1}{2} + \frac{3}{15} = \frac{2}{3} \approx 0.67\)  
(d) \(0.\overline{7} = \frac{7}{9}\)  
(e) \(\frac{5}{7} \approx 1.29\)  
(f) \(\frac{3}{22} \approx 13.64\%\)  
(g) \(\frac{22}{7} = 3\frac{1}{7}\)  
(h) 8 is 44\% of 18.18 \(\approx 18.18\). 

2. For this question you had to be able to interpret the given formulae. First of all, the question asks about the area of the paper the teacher needs to use, which means this is a surface area question. Secondly, you need to know that the given formula for the total surface area of a cone accounts for both the base and the lateral areas, and that the base area is the \(\pi r^2\) term. As such the dunce cap’s surface area will only be \(SA = \pi r \ell = \pi \cdot 5 \cdot 13 = 65\pi \approx 204.20\text{sq.in.}\). 

3. (a) The ‘housing’ angle measures approximately 155°. I accepted anything close.  
(b) The measure of 155° corresponds to \(\frac{155}{360}\) of the circle, which is about \(0.4167\) or 41.67\%.  
(c) By the same technique (measure the angle and find the percentage), you then calculate the percentage of 300 to get about 43.  

(a) \(\bar{x} \approx 183.9\)  
(b) \(\text{med} = 180\)  
(c) \(\text{mode} = 199\)  
(d) \(sx \approx 18.95\)  
(e) \(\frac{sx}{\bar{x}} \approx 10.30\%\)  
(f) The \textit{mode} is the worst answer, and I accepted a wide variety of responses, the general idea of which is that the mode is quite far from the mean and median and thus doesn’t do a good job of representing the overall trends of the data points. 

4. I received many excellent answers to this question, and many responses that were completely blank. The mean would be higher in Survey B, because the mean height in the NBA is higher than the mean among the rest of the population, which one presumes will be reflected by the relatively random mall sample. Additionally, because the population in Survey B is more homogenous; in particular, homogenously tall, one expects the standard deviation to be lower in Survey B. 

5. Recall that measurements in inches must be converted to sixteenths in order to use a conventional ruler. As such, a line which measures 2.8 will in fact be 2 inches plus \(0.8 \cdot 16 = 12.8 \approx 13\) sixteenths, which according to the ruler measures about 7.1 centimeters. 

6. This question is exactly the same as a question from your second homework assignment, which I went over in class on the board in detail. The small triangle inside the larger triangle is similar; the larger triangle has a bottom side length of 24, not 13.  

To solve, use the direct proportion \(\frac{x}{20} = \frac{11}{24}\) to get \(x \approx 9.17\).
7. To solve, rewrite the normal distribution chart with the given values for $\bar{x}$ and $sx$:

(a) Between 2120 and 2240: 13.5%
(b) Fewer than 1880 teeth: $2.5\% + 13.5\% = 16\%$
(c) Between 1880 and 2000: 34%

8. (a) $2x + 2 = -3$ [algebra] $x = -2.5$
(b) $x^3 - x^2 = 0$ [graphing] $x = 1, x = 0$
(c) $2x^2 + 3 = 2$ [graphing] **no solution**

9. The perimeter of the remaining wooden panel is comprised of the three straight sides (12", 20", 20") and the rounded side, which is half of a proper circle with a diameter of 12". As such the circular edge has perimeter $\frac{1}{2} \pi \cdot 12 = 6\pi$. Thus the whole perimeter is $12 + 12 + 20 + 6\pi \approx 70.85$ sq.in.