Answer to Chapter 7 Test Review

1. $\sqrt{139}$ is closer to the whole number 12. If you approximate the answer you get 11 $\frac{18}{23}$ which is closer on a number line to 12 then to 11.
2. $-\sqrt{14}$ is an irrational number because the actual answer when found using a calculator is a nonrepeating decimal that does not terminate. $- \frac{3}{4}$ is a rational number. Any number that can be made into a ratio or fraction is a rational number. Other examples of rational numbers include improper fractions, repeating decimals, terminating decimals, and perfect square numbers like 4 and 16.
3. $\sqrt{61}$ is closer to the whole number 8. If you calculate its approximate value it is 7$\frac{12}{15}$ on a number line this number would be closer to 8.
4. You are finding the leg of a right triangle so you must use a variation of $a^{2}+b^{2}=c^{2}$ solving for one of the sides $a^{2}=c^{2}$-$b^{2}$ so substituting in the values you would get a = 6 in
5. You are finding the leg of a right triangle so you must use a variation of $a^{2}+b^{2}=c^{2}$ solving for one of the sides $a^{2}=c^{2}$-$b^{2}$ so substituting in the values you would get a = 39.5 yd. (Don’t forget to round correctly. In this case round to the nearest 10th (1 decimal place to the right)
6. If given 3 sides of a triangle label the sides as either a leg (a or b) and the hypotenuse (c). Remember that the longest side is always the hypotenuse. The substitute the values into the Pythagorean Theorem $ a ^{2}+b^{2}=c^{2}$ if the two sides equal each other then you have a right triangle. In this case 122+352= 1369 and 372= 1369 so the triangle with sides of 12, 35, and 37 are right triangles.
7. If given 3 sides of a triangle label the sides as either a leg (a or b) and the hypotenuse (c). Remember that the longest side is always the hypotenuse. The substitute the values into the Pythagorean Theorem $ a ^{2}+b^{2}=c^{2}$ if the two sides equal each other then you have a right triangle. In this case 42+72= 65 and 152= 225 so the triangle with sides of 4,7 and 15 is not a right triangles.
8. The diagonal is always the hypotenuse of a right triangle. So use $ a ^{2}+b^{2}=c^{2}$ and substitute the 8.5 and the 11 in for legs a and b then solve for c and your answer is c 13.90, but it asks you to round to the nearest whole number so that would be 14.
9. A baseball diamond is a square so if you are moving from first directly to third that is the diagonal and that is the hypotenuse of a right triangle. So use $ a ^{2}+b^{2}=c^{2}$ and substitute in the values of 30 yards for legs a and b and solve for c. DON”T for get to take the square root of the sum of $ a ^{2}+b^{2}$ to give you c only. $ 90 ^{2}+90^{2}=1800^{}$ c=$\sqrt{1800}$ = 42.4 yards
10. In this problem you are given the diagonal and one side so you must solve for the missing side. Use $a^{2}=c^{2}$-$b^{2}$ which means $a^{2}=26^{2}$-$20.4^{2}$ = 259.84 so c = $\sqrt{259.84}$ = 16.1
11. Remember the ladder is always the hypotenuse. You are given the ladder length and the ground length so you must solve for the side of the building. Use $a^{2}=c^{2}$-$b^{2}$ which would be $a^{2}=16^{2}$-$8.5^{2}$ = 183.75 b = $\sqrt{183.75}$ = 13.55 and rounded to the nearest tenth would be 13.6
12. To solve this problem plot the points on a coordinate plane. Draw a line connecting the two points. From that line make a right triangle. Each leg of the triangle will the difference in units from one point to the next along the x or y axis. Use those values to find the length of the line connecting the two points or the hypotenuse. So $ a ^{2}+b^{2}=c^{2}$ and in this case a = 3 and b= 2 so $ 3 ^{2}+2^{2}=13 $ so c = $\sqrt{13}$ = 13.6 when rounded to the nearest tenth.
13. You are finding the slant height which is the hypotenuse. You are given that the legs are 8 and you can find the other leg because its length is ½ the base width of 4 cm) so a= 8 and b= 2. Use $ a ^{2}+b^{2}=c^{2}$ and so $ 8 ^{2}+2^{2}=68$ then take the square root of 68 to find c and c= 8.2 cm