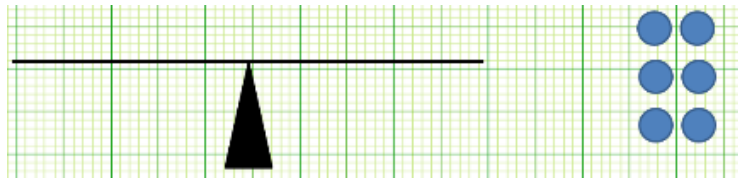


Problem Solving #6

1. Would it be less expensive for you to take a friend to the movies three times, or to take three friends to the movies one time?
2. Simplify. $7 \left[2 \left(\frac{\tan x}{\sec x} \right) (2 \sin x) + 4 \left(\frac{\cos x}{\sec x} \right) \right]$
3. In a strange small town the people only tell the truth on Sunday, Tuesday, and Thursday. Which day of the week is it if a resident says, "I told the truth yesterday."
4. There are 6 identical coins. However, 5 of them weigh 10 grams and one weighs 9.9 grams. Using a balance scale, find the lighter coin in two weightings.



5. Simplify. $\frac{\sqrt[100]{(\text{googol})^2}}{5^2}$
6. Three friends order three pizzas. The total is **\$30**, so each friend pays **\$10**. A few minutes later the clerk realizes the bill should only have been **\$25** because of a new special of 3 pizzas for **\$25**. He takes five **\$1** bills out of the cash register. Since the friends are not aware of the special, he has a lapse of judgment and gives each of the three friends **\$1** and keeps **\$2** as a tip for himself. Each friend paid **\$9** for a total **\$27** paid. The clerk kept **\$2** for himself.

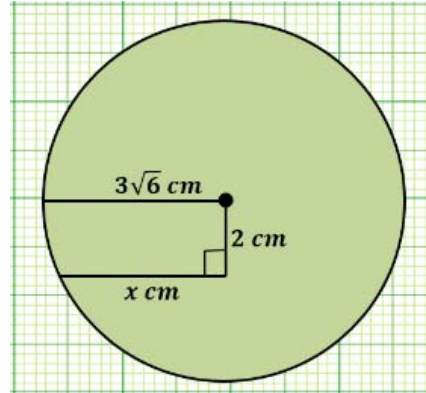
$$\mathbf{\$27 + \$2 = \$29}$$

If the friends originally paid \$30, where is the other \$1?

7. A runner and a walker start at the same point of a $\frac{1}{4}$ mile track and depart in the opposite direction. The runner runs 9 mph and the walker walks 3 mph. In how many seconds will they meet?



8. Determine the value of x .



Video Key

1. <https://www.youtube.com/watch?v=zLAK7V8ONs>
2. <https://www.youtube.com/watch?v=Ee-0Dkg7BrU>
3. <http://youtu.be/GISo145b3X8>
4. <http://youtu.be/cQhKTS1Laek>
5. <http://youtu.be/GzIEjc1z8L4>
6. <http://youtu.be/2uxs7hainoM>
7. <http://youtu.be/X-SUVUDRjrs>
8. <http://youtu.be/vn8AXfjwb84>

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