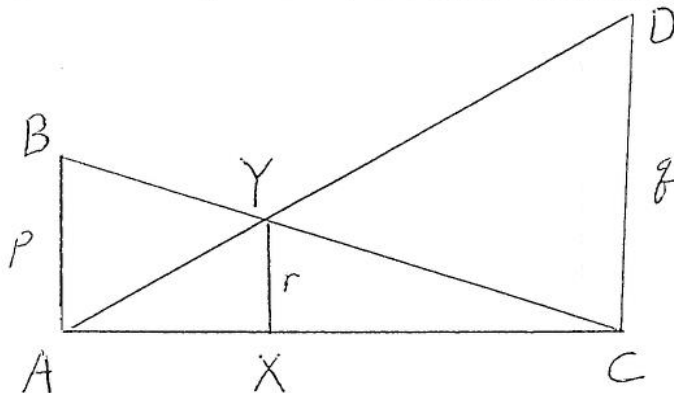


PONY EXPRESS PROBLEMS – Math Challenge (2006)

1. Norma was shopping at the mall when she noticed an ad in the window of a store which read: “Buy one shirt at the regular price and you may buy a second shirt for 32% off the regular price, and a third shirt for 60% off the regular price.” Furthermore, the sign said that the store would pay the 6% sales tax on the second shirt only. So Norma bought three shirts with the same original price and paid a total of \$70.33. What was the original price of one shirt?

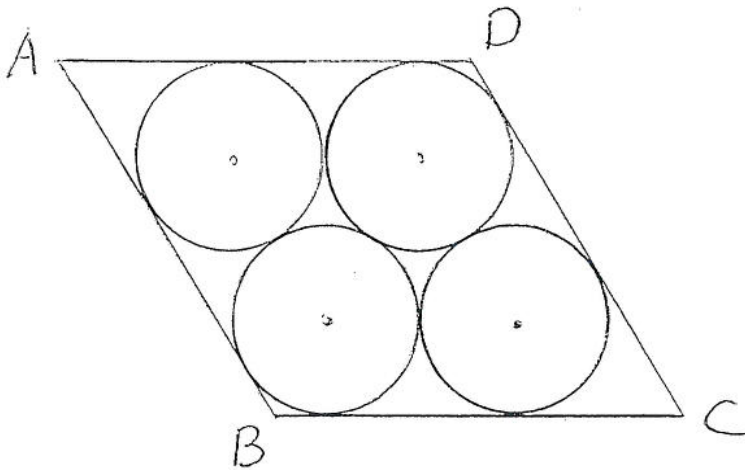
2. In the given drawing $\overline{BA} \perp \overline{AC}$, $\overline{DC} \perp \overline{AC}$, $\overline{YX} \perp \overline{AC}$. Find a numerical answer for $\frac{r}{p} + \frac{r}{q}$.



3. Ten writers covering a basketball league vote for the *Most Valuable Player* of the league by listing their top three choices. A first place vote earns 5 points, a second place vote earns 3 points and a third place vote earns 1 point. Jasmine Jade received a total of 37 points. How many writers must have listed her on their ballots?

4. Dylan is riding his bicycle due west at an average speed of 15 mph on a road running parallel to a railroad track. A train is also heading west at an average speed of 40 mph and the front of its lead engine is even with Dylan's bicycle. If Dylan reaches a crossroad 0.8 miles ahead at exactly the same time as the last car of the train passes over the crossroad, what was the length of the train? (Give answer in feet assuming there are 5280 feet in a mile.)

5. In the given drawing each circle has a radius of 6 cm. The circles are tangent to each other as shown in the drawing. Find the exact area of the parallelogram ABCD whose sides are tangent to the circles as shown.



6. Jim, Bud, and Sam were arrested by the police because one of them was suspected of having stolen a car. The three suspects made the following statements under questioning.

Jim: I am innocent

Bud: I am innocent

Sam: Bud is the guilty one.

If *only one* of the above statements turned out to be true, who stole the car?