1) A restaurant hosts children's birthday parties for a cost of $120 for the first six children (including the birthday child) and $30 for each additional child. If Jaden's parents have a budget of $200 to spend on his birthday party, how many guests can Jaden invite?

2) Oswald is trying to cut down on drinking coffee. His goal is to cut down to 6 cups per week. If he starts with 24 cups the first week, then cuts down to 21 cups the second week and 18 cups the third week, how many weeks will it take him to reach his goal?

3) A new theme park opens in Milford. On opening day, the park has 120 visitors; on each of the next three days, the park has 10 more visitors than the day before; and on each of the three days after that, the park has 20 more visitors than the day before.

   a) How many visitors does the park have on the seventh day?

   b) How many total visitors does the park have all week?

4) Tickets to an event go on sale for $20 six weeks before the event, and go up in price by $5 each week. What is the price of tickets one week before the event?
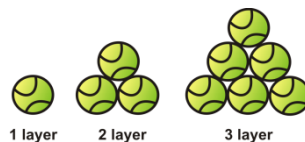
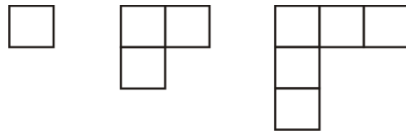5) Mark is three years older than Janet, and the sum of their ages is 15. How old are Mark and Janet?

6) Josie takes up jogging. On the first week she jogs for 10 minutes per day, on the second week she jogs for 12 minutes per day. Each week, she wants to increase her jogging time by 2 minutes per day. If she jogs six days each week, what will be her total jogging time on the sixth week?

7) You arrange tennis balls in triangular shapes as shown. How many balls will there be in a triangle that has 8 rows?

1 layer   2 layer   3 layer

8) A pattern of squares is put together as shown. How many squares are in the 12th diagram?

9) In Harrisville, local housing laws specify how many people can live in a house or apartment: the maximum number of people allowed is twice the number of bedrooms, plus one. If Jan, Pat, and their four children want to rent a house, how many bedrooms must it have?

10) How many hours will a car traveling at 75 miles per hour take to catch up to a car traveling at 55 miles per hour if the slower car starts two hours before the faster car?
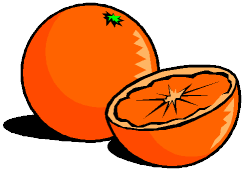
11) Grace starts biking at 12 miles per hour. One hour later, Dan starts biking at 15 miles per hour, following the same route. How long will it take him to catch up with Grace?
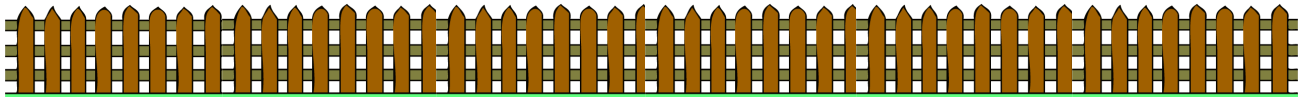
12) Mikhail is filling a sack with oranges.

    a. If each orange weighs 5 ounces and the sack will hold 2 pounds, how many oranges will the sack hold before it bursts?

    b. Mikhail plans to use these oranges to make breakfast smoothies. If each smoothie requires $\frac{3}{4}$ cup of orange juice, and each orange will yield half a cup, how many smoothies can he make?

13) Lemuel wants to enclose a rectangular plot of land with a fence. He has 24 feet of fencing. What is the largest possible area that he could enclose with the fence?

14) In a one-on-one basketball game, Jane scored $1\frac{1}{2}$ times as many points as Russell. If the two of them together scored 10 points, how many points did Jane score?

15)   Andrew cashes a $180 check and wants the money in $10 and $20 bills. The bank teller gives him 12 bills. How many of each kind of bill does he receive?

16)   Britt has $2.25 in nickels and dimes. If she has 40 coins in total, how many of each coin does she have?
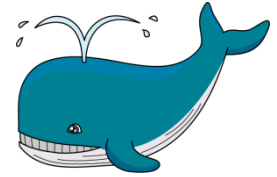
17)   Jeremy divides a 160-square-foot garden into plots that are either 10 or 12 square feet each. If there are 14 plots in all, how many plots are there of each size?

18)   Scientists are tracking two pods of whales during their migratory season. On the first day of June, one pod is 120 miles north of a certain group of islands, and every day thereafter it gets 15 miles closer to the islands. The second pod starts out 160 miles east of the islands on June 3, and heads toward the islands at a rate of 20 miles a day.
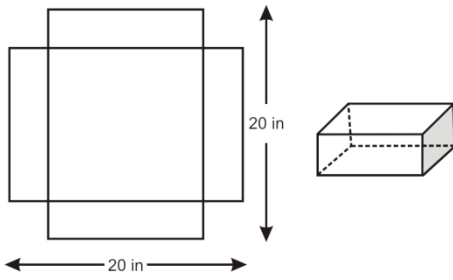
a. Which pod will arrive at the islands first, and on what day?

b. How long after that will it take the other pod to reach the islands?

c. Suppose the pod that reaches the islands first immediately heads south from the islands at a rate of 15 miles a day, and the pod that gets there second also heads south from there at a rate of 25 miles a day. On what day will the second pod catch up with the first?

d. How far will both pods be from the islands on that day?

20 in

20 in

19)   Anne is making a box without a lid. She starts with a 20 in. square piece of cardboard and cuts out four equal squares from each corner of the cardboard as shown. She then folds the sides of the box and glues the edges together. How big does she need to cut the corner squares in order to make the box with the biggest volume?

20)   A movie theater with 200 seats charges $8 general admission and $5 for students. If the 5:00 showing is sold out and the theater took in $1468 for that showing, how many of the seats are occupied by students?