Lesson 17

1 - 2)

```
              1
           1     1
        1     2     1
     1     3     3     1
  1     4     6     4     1
1     5    10    10     5     1
1   6   15   20   15    6    1
```

3 - 4)

```
              1
           1     1
        1     2     1
     1     3     3     1
  1     4     6     4     1
1     5    10    10     5     1
1   6   15   20   15    6    1
1   7  21   35   35   21   7   1
1   8  28   56   70   56   28   8   1
```

5 - 6)

```
                 1
              1     1
           1     2     1
        1     3     3     1
     1     4     6     4     1
  1     5    10    10     5     1
1     6    15    20    15     6     1
1    7   21   35   35   21   7   1
1   8  28   56   70   56   28   8   1
1   9  36   84  126  126   84   36   9   1
```
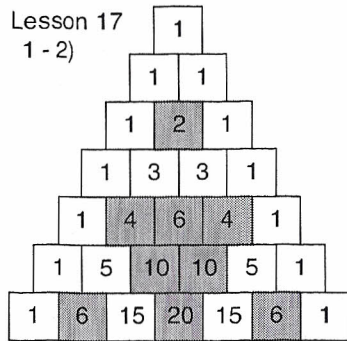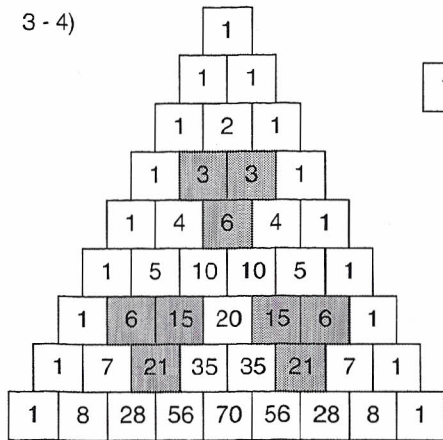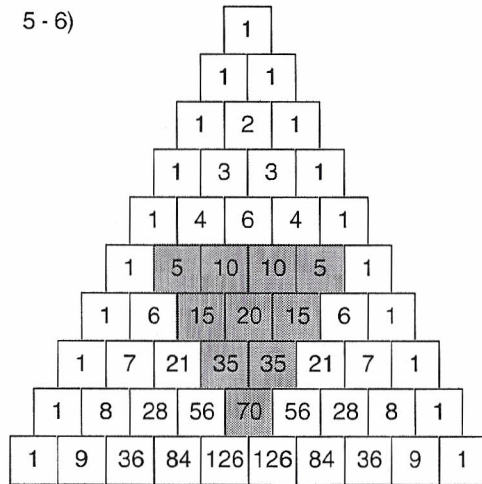
7) $1 + 4 + 10 = 15$

8) Answers will vary, but the sum of the numbers in the "handle" of the "hockey stick" will always equal the number in the smaller rectangle.

Lesson 18

1) $M + (M - 11) = 21$
    $2M - 11 = 21$
    $2M = 32$
    M = $16 for the meal
    $16 - 11 = 5.00 for the dessert

2) $6 - 7 + 3 - 4 = -2$ mi east, or 2 miles west. The answer should not be written as a negative number, because it is a distance, and distance is always positive.

3) $X + (X - 200) = 300$
    $2X - 200 = 300$
    $2X = 500$
    $X = 250$
    Isaac has $250

4) Let J = the number of dollars John earned
    $J + (J - 18) = 60 - 3.50$
    $2J - 18 = 56.50$
    $2J = 74.50$
    J = $37.25

5) In a square, the perimeter is 4 times the length of one side, so:
    $S = (S + 57) \div 4$
    $4S = S + 57$
    $3S = 57$
    $S = 19$

6) Distance is always positive, so he should have reported the distance as 20 ft.

7) $P = W + W + L + L$
    $52 = W + W + 20 + 20$
    $52 = 2W + 40$
    $12 = 2W$
    $W = 6$ ft.

8) using fractions:
    $$\left(N \times \frac{9}{5}\right) + 32 = (N - 32) \times \frac{5}{9}$$
    $$45\left(N \times \frac{9}{5}\right) + 45\,(32) = (N - 32) \times \frac{5}{9}(45)$$
    $81N + 1,440 = (N - 32) \times 25$
    $81N + 1,440 = 25N - 800$
    $56N = -800 - 1,440$
    $56N = -2,240$
    $N = -40°$

    using decimals:
    $1.8N + 32 = (N - 32) \times .56$ (rounded)
    $1.8N + 32 = .56N - 17.92$
    $1.8N - .56N = -17.92 - 32$
    $1.24N = -49.92$
    $124N = -4992$
    $N = -40.25°$
    (In this case, the fractions give the exact value, and the decimals give an approximate value because of the rounding.)