1.

The units digit of a three-digit number, ABC, is moved to the left of the remaining two digits to make a new three-digit number, CAB. If CAB − ABC = 162, what is the sum of the least and greatest possible values of ABC?

2.

The line with equation $ax + by = c$, where a, b and c are positive, forms a right triangle with legs on the x- and y-axes. What is the area of the triangle? Express your answer as a common fraction in terms of a, b and c.

3.

Each digit 0 through 9 is used exactly once to create two five-digit numbers. What is the sum of the digits of the greatest product of two such numbers?

4.

Show the following are true:

$1/n(n+1) = 1/n - 1/(n+1)$

$1/(n(n+k) = 1/k\,(1/n - 1/(n+k))$

5.

Find the sum:

$1/(1x3) + 1/(3x5) + 1/(5x7) + \ldots. + 1/(11x13) =$

6.

Find the sum:

$1/(1x2) + 1/(2x3) + \ldots. + 1/(100x101) =$

7.
Find the sum:

$3/(1x4) + 3/(4x7) + 3/(7x10) + ... + 3/(19x22) =$

8.
A container is ¾ full of water. If 16 gallons of the water were removed from the container, it would be 1/3 full. How many gallons of water does this container hold when it is completely full?

9.
If 3/8 of a number is 21/2, what is 1/7 of the number?

10.
By 4:00 pm, 1/5 of the junior class had arrived at a school dance. By 5:00 pm 60 more juniors had arrived raising attendance to 1/3 of the junior class. How many people are in the junior class?

11.
On a hike, Ian walked downhill 3/7 of the time and uphill 4/7 of the time. His downhill walking rate was 5km/h and his uphill waking rate 3km/h. The distance that Ian walked downhill was what fraction of the total distance he walked?