

Name:

Date:

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1.  $\frac{1}{2}$
2.  $\frac{2}{3}$
3. A
4. Factorize the following.
  - (a)  $(x + y - 2)(x - y + 2)$
  - (b)  $(a - b)^2(a^2 + ab + b^2)$
  - (c)  $(x + 4)(x - 4)(x + 2)$
  - (d)  $(x + y - xy + 1)(x + y - xy - 1)$
5. First, multiply out  $(x + a)(x - b) = x^2 + ax - bx - ab = x^2 + x(a - b) - ab = x^2 + x - n$ . Since these two quantities are equal, then  $a - b = 1$  and  $ab = n$ . So now we need to find all the pairs of numbers such that their difference is 1 and their product is 100 or less. There are 7: (2,1), (3,2), (4,3), (5,4), (6,5), (7,6), (8,7), (9,8), (10,9). Any other combination of numbers and the difference wouldn't be 1 or the product would exceed 100. Now find the sum of the products, and we get  $330$
6.  $(x^2 + 8x + 6)(x^2 + 4x + 6)$
7.  $(x - 2y + 1)(x + y - 2)$
8. The roots of the equation must divide the last number 15, so they could be  $\pm 1, \pm 3, \pm 5, \pm 15$ . Try each of them until you find the roots, and factor it to  $(x + 3)(x - 1)(x - 5)$
9. If we do polynomial division, we find that in order to get a remainder of 0,  $m = \frac{1}{2}$
10. 0