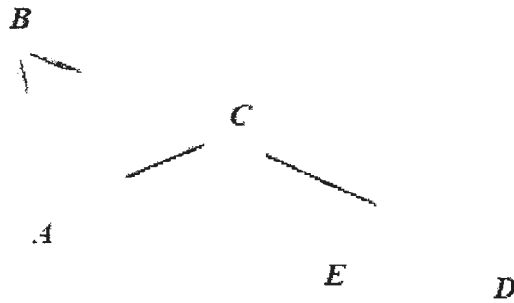
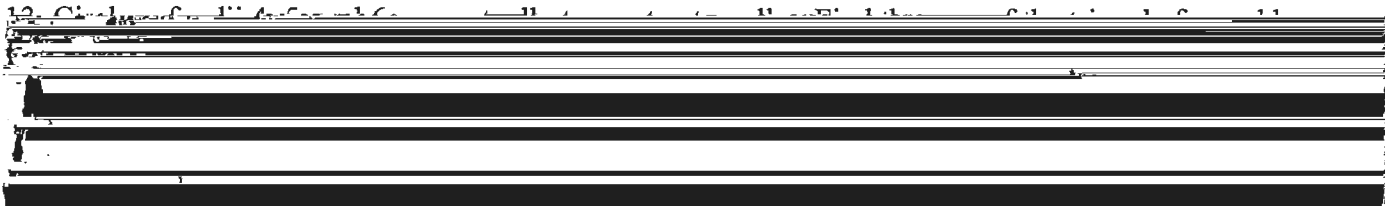
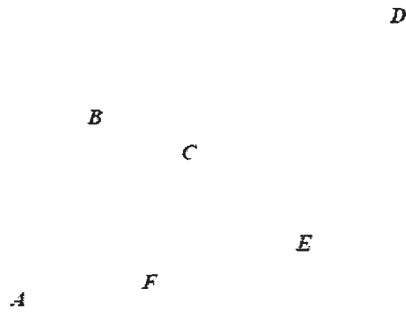


## 2018 John O'Bryan Mathematical Competition

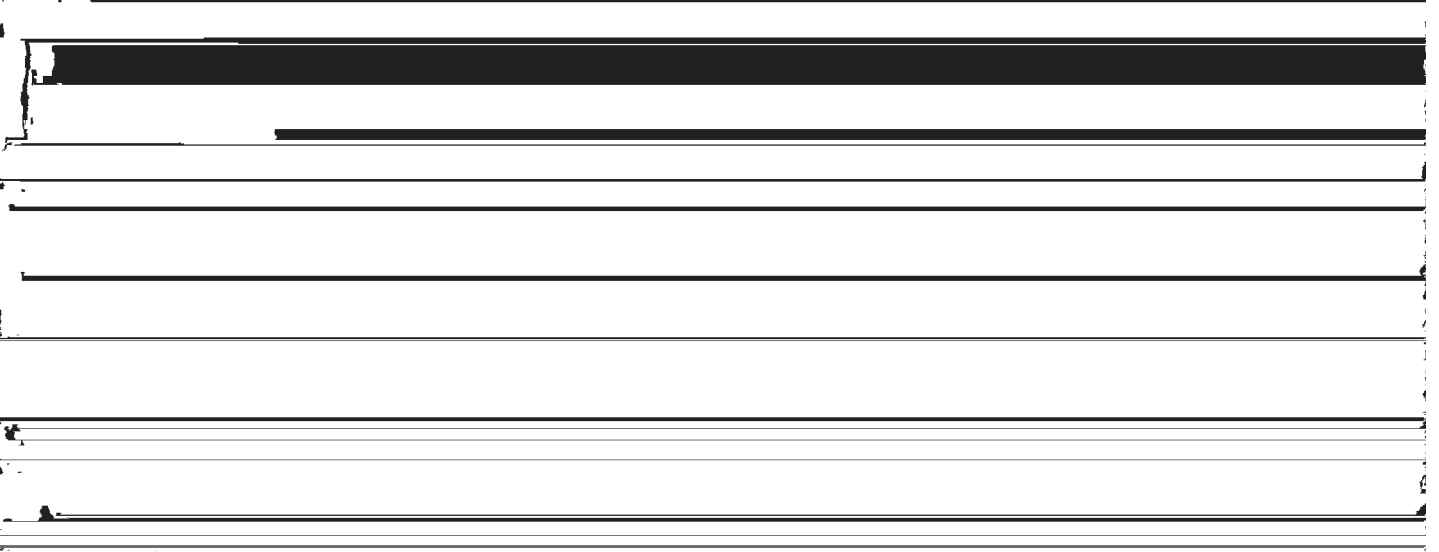
**Directions:** Please answer all questions on the answer sheet provided. All answers must be written legibly in the correct blanks on the answer sheet and in simplest form. Exact answers are to be given unless otherwise specified in the question. No units of measurement are required. Each problem has the same point-value.

1. Find the largest odd three-digit number such that the hundreds digit is equal to twice the ones digit and the

12. In the diagram,  $\overline{AB} \parallel \overline{CF} \parallel \overline{DE}$  where  $AB = 16$  and  $DE = 24$ , find the length of  $CF$ . Express your answer as an exact decimal.



15. The number 5760 can be expressed as  $4^a 5^b 6^c$  where  $a$ ,  $b$ , and  $c$  are rational numbers. Find the value of  $a^4 b^5 c^6$ .
16. A triangle is selected at random from the set of triangles with internal degree measure angles for which the ratio of the degree measures of the angles is  $a:b:c$ , where  $a$ ,  $b$ , and  $c$  are consecutive positive integers. Find the probability that the degree measure of the largest angle is an odd number. Express your answer as a



Name:           **ANSWERS**

**2018 John O'Bryan Mathematical Competition  
Freshman-Sophomore Individual Test**

**Note: All answers must be written legibly and in simplest form. Exact answers are to be given unless otherwise specified in the question. No units of measurement are required. Each problem has the**

		Must be this reduced fraction.		9.6	Must be this exact decimal.
		Must be this reduced fraction.		$30\sqrt{2}$	Must be this exact answer.
3.			<u>13</u>		
	48		14.	145	(degrees optional)
5.			15.		
6.	6		16.	$\frac{4}{11}$	Must be this reduced fraction.
7.	6		17.	204	
8.	110	(degrees optional)	18.	$\frac{91}{3}$	Must be this reduced fraction.
9.	2701		19.	55	
10.	45		20.	<u>46.07</u>	Must be this exact decimal.