

**2017 John O'Bryan Mathematical Competition**  
**Questions for the Two-Person Speed Event**

**\*\*\*Calculators may not be used on the first four questions\*\*\***

1. 120 students were provided a provided a choice of breakfast. They had three choices: fruit, cereal, and/or yogurt. 53 students had cereal, 47 students had yogurt, and 47 students had fruit. Also 38 students had only cereal, 12 students had only yogurt, and 27 students had only fruit.

[The following area contains multiple horizontal lines for writing answers, which are mostly obscured by heavy black redaction bars.]

**2017 John O'Bryan Mathematical Competition**  
**Answers for the Two-Person Speed Event**

**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 same point-value; however ties for individual awards will be broken based on problem difficulty.

**Calculators are not allowed to be used on the first four questions!**

This competition consists of eight competitive rounds. Correct answers will receive the following

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3.           4

4.            $31/6$  (must be reduced fraction)

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$2/15$  (must be reduced fraction)

8.            $35/128$  (must be reduced fraction)

T1.          414720

T2.          42<sub>nine</sub> or 42