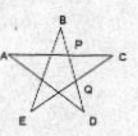


- Since the lines are parallel m∠ABC + m∠DCB = 180°. Bisecting the angles gives m∠EBC + m∠ECB = 90°, so the remaining angle in the triangle is 90.
- 8. The midpoint of the segment is (2,3), and the slope of the segment is 2. So the line connecting (4,k) and (2,3) must have slope -1/2. So $\frac{k-3}{4-2} = -\frac{1}{2}$ and thus k=2
- 9. Let QW = x and then WT = 12 -x. Since $\triangle PQW \triangle RTW$, $\frac{10}{15} = \frac{x}{12 x}$. So x = 4.8
- 10. If Cain is guilty, then Abel and Cain both told the truth. If Baker were guilty, then Abel and Cain both told the truth. If Abel is guilty, only Cain told the truth. So Abel is guilty.
- 11. In the five exterior triangles, the total of the angles is 5(180) = 900. The total of all the exterior angles of the pentagon is 720, so the five angles in question add up to 180. Alternate solution: In the diagram note that m \(\text{BPC=m\angle A+m\D} \) and that m\(\text{DQC=m\angle E+m\B} \) since an exterior angle of a triangle equals the sum of the remote interior angles. But we know that m\(\text{BPC+m\DQC+m\C=180} \), so by substitution, m\(\text{A+m\angle B+m\angle C+m\D+m\E=180} \). Note as well that neither solution required an equiangular polygon.



12. The total in math or science or both is 560 + 435 - 220 = 775. So 75 students take neither. Thus the desired probability is $\frac{75}{850}$, or $\frac{3}{34}$