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| 1.   Translate from the English form to algebraic form. The square of the difference of 2*x* plus *y* and 8 |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**((2*x* + *y*) – 8)2 | | **B.**82 – (2*x* + *y*) | | **C.**(2*x* + *y*)2 + 82 | | **D.**(2*x* + *y*)2 + 8 | |  |  |  |  |  |  |  |  |  |

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| 2.   A bus driver follows a morning route and an afternoon route each day. Because there are more cities on the morning route, the average speed is 12 miles per hour less than the afternoon route. The driver covers 70 miles on the morning route in the same amount of time as she covers 100 miles on the afternoon route. Find her average speed on the afternoon route. |
| |  | | --- | | **A.**40 miles per hour | | **B.**51 miles per hour | | **C.**36 miles per hour | | **D.**28 miles per hour | |

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| 3.   Simplify the rational expression. https://my.pennfoster.com/exams/images/350403RR_Q35_stem.png |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**https://my.pennfoster.com/exams/images/350403RR_Q35_5-2-x2.png | | **B.**https://my.pennfoster.com/exams/images/350403RR_Q35_45-45.png | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q35_2x2.png | | **D.**https://my.pennfoster.com/exams/images/350403RR_Q35_2-5x2.png | |  |  |  |  |  |  |  |  |  |

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| 4.   Simplify the expression. https://my.pennfoster.com/exams/images/350403RR_Q60_stem.png |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**https://my.pennfoster.com/exams/images/350403RR_Q60_neg2-3a-2.png | | **B.**–2 | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q60_neg2-8a2.png | | **D.**https://my.pennfoster.com/exams/images/350403RR_Q60_neg2-6a2.png | |  |  |  |  |  |  |  |  |  |

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| 5.   Find the product of (*x* – 2*y*)2 |
| |  | | --- | | **A.***x*2 + 4*xy* + 4*y*2 | | **B.***x*2 + 4*y*2 | | **C.***x*2 + 2*xy* + 4*y*2 | | **D.***x*2 – 4*xy* + 4*y*2 | |

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| 6.   Translate from algebraic form to English form.  (*m* – *n*)(*m* + *n*) | | | | | | | | | | | | | | | | | | |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**The sum of the product of *m* minus *n* and the product of *m* and *n* | | **B.**The product of *m* minus *n* and the opposite of *m* minus *n* | | **C.**The product of the difference of *m* and *n* and the sum of *m* and *n* | | **D.**The product of the difference between *m* and *n*. | | | | | | | | | | | | | | | | | | | |  |  |  |  |  |  |  |  |  |
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| 7.   Write the number in standard notation: 6.5 × 10–7. | | | | | | | | | |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**0.00000065 | | **B.**0.0000000065 | | **C.**0.0000065 | | **D.**65,000,000 | | | | | | | | | | |  |  |  |  |  |  |  |  |  |
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| 8.   A plane can fly 540 miles with the wind in one hour less than it can fly 480 miles against the wind. The average wind speed is 30 miles per hour. Find the speed of the plane in still air. | | | | | | | | | | | | | | | | | | | | | | | | | | | |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**150 miles per hour | | **B.**120 miles per hour | | **C.**210 miles per hour | | **D.**180 miles per hour | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  |  |  |  |  |  |  |  |  |
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| 9.   Factor the polynomial by grouping, if possible. 3*v*2*w* – 21*vw* – 3*v*2 + 21*v* |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**3*v*(*v* – 7)(*v* + 1) | | **B.**3*v*(*v* – 7)(*w* – 1) | | **C.**3*vw*(*v* – 7) – 3(*w* – 1) | | **D.**It can't be factored. | |  |  |  |  |  |  |  |  |  |

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| 10.   Simplify the expression. https://my.pennfoster.com/exams/images/350403RR_Q58_stem.png |
| |  | | --- | | **A.**1 | | **B.**https://my.pennfoster.com/exams/images/350403RR_Q58_2b-2.png | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q58_b-3.png | | **D.**–1 | |

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| 11.   Subtract. https://my.pennfoster.com/exams/images/350403RR_Q40_stem.png |
| |  | | --- | | **A.**https://my.pennfoster.com/exams/images/350403RR_Q40_23t-8.png | | **B.**https://my.pennfoster.com/exams/images/350403RR_Q40_1-t.png | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q40_20t2.png | | **D.**https://my.pennfoster.com/exams/images/350403RR_Q40_50-4t.png | |

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| 12.   Perform the indicated operations. https://my.pennfoster.com/exams/images/350403RR_Q38_stem.png |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**3 | | **B.**https://my.pennfoster.com/exams/images/350403RR_Q38_1-3.png | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q38_1-3x2.png | | **D.**https://my.pennfoster.com/exams/images/350403RR_Q38_x3-3x-3.png | |  |  |  |  |  |  |  |  |  |

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| 13.   Factor out the greatest common factor. 30*t*2*u* + 12*tu*2 + 24*tu* |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**6*tu*(5*t* + 2*u* + 4) | | **B.**2*tu*(15*t* + 6*u* + 12) | | **C.**3*tu*(10*t* + 4*u* + 8) | | **D.**6*u*(5*t* – 2*u* + 4) | |  |  |  |  |  |  |  |  |  |

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| 14.   The square of a number is equal to 6 more than the number. Find all such numbers. |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**–4; –3 | | **B.**–2 | | **C.**–3 | | **D.**3; –2 | |  |  |  |  |  |  |  |  |  |

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| 15.   Factor the polynomial by grouping, if possible. 2*xy* – 9*cx* – 18*cy* + 81*c*2 |
| |  | | --- | | **A.**(2*c* – 9*y*)(*x* – 9*y*) | | **B.***c*(2*y* – 9*c*)(*x* – 9) | | **C.**It can't be factored. | | **D.**(2*y* – 9*c*)(*x* – 9*c*) | |

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| 16.   If *x* varies directly as *p*, and *x* = 48 when *p* = 8, find *x* when *p* is 15. |
| |  | | --- | | **A.**https://my.pennfoster.com/exams/images/350403RR_Q45_x-5-2.png | | **B.**https://my.pennfoster.com/exams/images/350403RR_Q45_x-1-90.png | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q45_x-2-5.png | | **D.***x* = 90 | |

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| 17.   Write the number in scientific notation: 0.00000063. | | | | | | | | | |
| |  | | --- | | **A.**0.63 × 10–6 | | **B.**6.3 × 10–7 | | **C.**63 × 10–8 | | **D.**6.3 × 107 | | | | | | | | | | |
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| 18.   Divide the rational expressions. https://my.pennfoster.com/exams/images/350403RR_Q37_stem.png |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.**https://my.pennfoster.com/exams/images/350403RR_Q37_1-6y.png | | **B.**https://my.pennfoster.com/exams/images/350403RR_Q37_1-6-y.png | | **C.**https://my.pennfoster.com/exams/images/350403RR_Q37_7y-1.png | | **D.**https://my.pennfoster.com/exams/images/350403RR_Q37_49y2.png | |  |  |  |  |  |  |  |  |  |

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| 19.   Solve the proportion. https://my.pennfoster.com/exams/images/350403RR_Q43_stem.png |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.***x* = 0 | | **B.***x* = 49 | | **C.***x* = 147 | | **D.***x* = 1176 | |  |  |  |  |  |  |  |  |  |

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| 20.   *Q* varies inversely as the square of *p*, and *Q* = 36 when *p* = 7. Find *Q* when *p* = 6. |  |  |  |  |  |  |  |  |  |
| |  | | --- | | **A.***Q* = 6 | | **B.***Q* = 49 | | **C.***Q* = 42 | | **D.***Q* = 176 | |  |  |  |  |  |  |  |  |  |