Exercises

1. State the property for each problem.

   (a) $3(-5) = -15$ is a unique integer. — Closure Property for Integer Multiplication

   (b) $[2\ (-1)](-4) = 2\ [(-1)(-4)]$ — Associative Property for Integer Multiplication

   (c) -7 is the unique integer such that $7 + (-7) = 0$. — Inverse Property for Integer Addition

   (d) $(-8) + (-5) = (-5) + (-8)$ — Commutative Property for Integer Addition

   (e) 1 is the unique integer such that $-3(1) = 1(-3) = -3$. — Identity Property for Integer Multiplication

2. Fill in the blank with the name of the property used for each step.

$4(-3) + (-2)[1 + (-6)] = 4(-3) + [(-2)(1) + (-2)(-6)]$ Distributive Property of Multiplication over Addition of Integers

$= 4(-3) + [(-2)(-6) + (-2)(1)]$ Note $(-2)(1) + (-2)(-6) = (-2)(-6) + (-2)(1)$; Commutative Property for Integer Addition

$= [4(-3) + (-2)(-6)] + (-2)(1)$ Note $4(-3) + [(-2)(-6) + (-2)(1)] = [4(-3) + (-2)(-6)] + (-2)(1)$; Associative Property for Integer Addition

$= [4(-3) + (-6)(-2)] + (-2)(1)$ Note $(-2)(-6) = (-6)(-2)$; Commutative Property for Integer Multiplication

$= [(-12) + 12] + (-2)(1)$ Note $4(-3) = -12$ and $(-6)(-2) = -12$; Closure Property for Integer Multiplication (or Basic Facts)

$= [12 + (-12)] + (-2)(1)$ Note $(-12) + 12 = 12 + (-12)$; Commutative Property for Integer Addition

$= 0 + (-2)(1)$ Note $12 + (-12) = 0$; Inverse Property for Integer Addition

$= (-2)(1)$ Note $0 + (-2)(1) = (-2)(1)$; Identity Property for Integer Addition

$= -2$ $(-2)(1) = -2$; Identity Property for Integer Multiplication