***Rules for Multiplying Integers***

**Rule 1:**

If the integers have the same signs then the product will be positive.

$$\left(+\right)\*\left(+\right)=(+)$$

$\left(-\right)\*\left(-\right)=(+)$

**Rule 2:**

If the integers have different signs then the product will be **negative.**

$$\left(-\right)\*\left(+\right)= \left(-\right)$$

$$\left(+\right)\*\left(-\right)=\left(-\right)$$

**Sample Problem 1**: **Find the product of each expression below using the rules for multiplying integers.**

|  |  |  |
| --- | --- | --- |
| **a.** | $$14\* 2=$$ | $14\* 2=28$ |
| **b.** | $$\left(-10\right)\*\left(-4\right)=$$ | $$\left(-10\right)\*\left(-4\right)=40$$ |
| **c.** | $$\left(-13\right)\*\left(-13\right)=$$ | $$\left(-13\right)\*\left(-13\right)=169$$ |
| **d.** | $$12\*21=$$ | $$12\*21=252$$ |

**Sample Problem 2**: **Find the product of each expression below using the rules for multiplying integers.**

|  |  |  |
| --- | --- | --- |
| **a.** |  $\left(-13\right)\*14=$ |  $\left(-13\right)\*14=-182$ |
| **b.** | $$18\*\left(-10\right)=$$ | $$18\*\left(-10\right)=-180$$ |
| **c.** | $$\left(-7\right)\*22=$$ | $$\left(-7\right)\*22=-154$$ |
| **d.** | $$100\*\left(-10\right)=$$ | $$100\*\left(-10\right)=-1,000$$ |

***Rules for Dividing Integers***

**Rule 1:**

If the integers have the same signs then the quotient will be **positive.**

$$\left(+\right)÷\left(+\right)=\left(+\right) or \frac{\left(+\right)}{\left(+\right)}= \left(+\right)$$

$$\left(-\right)÷\left(-\right)=\left(+\right) or \frac{\left(-\right)}{\left(-\right)}= \left(+\right)$$

**Rule 2:**

If the integers have different signs then the quotient will be **negative.**

$$\left(-\right)÷\left(+\right)= \left(-\right) or \frac{\left(-\right)}{\left(+\right)}=\left(-\right)$$

$$\left(+\right)÷\left(-\right)= \left(-\right) or \frac{\left(+\right)}{\left(-\right)}=\left(-\right)$$

**Sample Problem 3**: **Find the quotient of each expression below using the rules for dividing integers.**

|  |  |  |
| --- | --- | --- |
| **a.** | $$234÷ 2=$$ | $234÷ 2=117$ |
| **b.** | $$\left(-1,000\right)÷\left(-4\right)=$$ | $$\left(-1,000\right)÷\left(-4\right)=250$$ |
| **c.** | $$\left(-196\right)÷\left(-14\right)=$$ | $$\left(-196\right)÷\left(-14\right)=14$$ |
| **d.** | $$\frac{-225}{-5}=$$ | $$\frac{-225}{-5}=45$$ |

**Sample Problem 4**: **Find the quotient of each expression below using the rules for dividing integers.**

|  |  |  |
| --- | --- | --- |
| **a.** |  $\left(-432\right)÷9=$ |  $\left(-432\right)÷9=-48$ |
| **b.** | $$2,025÷\left(-45\right)=$$ | $$2,025÷\left(-45\right)=-45$$ |
| **c.** | $$\frac{-216}{36}=$$ | $$\frac{-216}{36}=-6$$ |
| **d.** | $$1,024÷\left(-16\right)=$$ | $$1,024÷\left(-16\right)=-64$$ |

**Sample Problem 5**: **Solve each expression below.**

|  |  |  |
| --- | --- | --- |
| **a.** |  $\left(-12\right)\*\left(-140\right)÷8=$ | $$ \left(-12\right)\*\left(-140\right)÷8=$$$$=1,680÷8=$$$$=210$$ |
| **b.** | $$128÷4\*(-14)=$$ | $$ 128÷4\*(-14)=$$$$=32\*(-14)=$$$$=-448$$ |
| **c.** | $$(-100)÷\left[20÷(-10)\right]^{2}=$$ | $$ (-100)÷\left[20÷(-10)\right]^{2}=$$$$=(-100)÷\left[-2\right]^{2}=$$$$=\left(-100\right)÷4=$$$$=-25$$ |

***Combined operations on integers***

**Sample Problem 6**: **Solve each expression below using order of operations.**

|  |  |  |
| --- | --- | --- |
| **a.** |  $\left(-23\right)+\left[45+(-15)\right]\*\left(-14\right)-8=$ | $$ \left(-23\right)+\left[45+(-15)\right]\*\left(-14\right)-8=$$$$=\left(-23\right)+\left[30\right]\*\left(-14\right)-8=$$$$=\left(-23\right)+\left(-420\right)-8=$$$$=\left(-443\right)-8=$$$$=\left(-443\right)+(-8)=$$$$=-451$$ |
| **b.** | $$28÷4+\left[225÷(-5)\right]-(-24)=$$ | $$ 28÷4+\left[225÷(-5)\right]-(-24)=$$$$=28÷4+\left[-45\right]-(-24)=$$$$=7+\left[-45\right]-\left(-24\right)=$$$$=-38-\left(-24\right)=$$$$=-38+24=$$$$=-14$$ |
| **c.** | $$\left(-10\right)\*\left[1,200÷\left(-100\right)\right]^{2}-\left[15÷(-3)\right]=$$ | $$ \left(-10\right)\*\left[1,200÷\left(-100\right)\right]^{2}-\left[15÷(-3)\right]=$$$$=\left(-10\right)\*\left[-12\right]^{2}-\left[15÷(-3)\right]=$$$$=\left(-10\right)\*144-\left[-5\right]=$$$$=-1,440-\left[-5\right]=$$$$=-1,440+5=$$$$=-1,435$$ |