# Chapter 2. Real Numbers

## Ex. 2.3

### Answer 1CU.

The product of two numbers will be negative if the numbers are opposite in sign.

Consider the product $(-6)(3)$.

Here,

$$a = -6 \quad (\text{Negative})$$
$$b = 3 \quad (\text{Positive})$$

Then,

$$ab = (-6)(3)$$
$$= -18 \qquad \text{Multiply the absolute values}$$

Consider the product $5(-6)$.

Here,

$$a = 5 \quad (\text{Positive})$$
$$b = -6 \quad (\text{Negative})$$

Then,

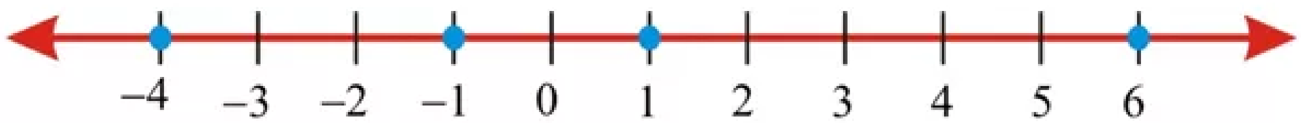
$$ab = 5(-3)$$
$$= -15 \qquad \text{Multiply the absolute values}$$

Thus the condition.

### Answer 1PQ.

The number that corresponds to a point on a number line is called the coordinate of that point.

Consider the number line




The objective is to determine the co-ordinate of the point on the number line.

The dots $(\bullet)$ indicate each point on the graph.

Therefore, the coordinates of the set of numbers on the number line are $\{-4, -1, 1, 6\}$.

## Answer 2PQ.

Consider the expression $32-|x+8|$.

The objective is to determine the absolute value of the given expression.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Therefore,

$32-|x+8|$ [Given expression]

$=32-|15+8|$ [Replace $x$ with $15$]

$=32-|23|$ [Add within modulus: $15+8=23$]

$=32-23$ [Absolute value of $23$ is $23$]

$=32+(-23)$ [Add the opposite of $23$ i.e. $(-23)$]

$=9$ [Simplify]

Hence the required value of the given expression is $\boxed{9}$.

## Answer 3CU.

Since, Multiplication is repeated addition, multiplying a negative number by another negative number is the same as adding repeatedly in the opposite or positive direction.

## Answer 9PQ.

To add rational numbers with the opposite sign, subtract the lesser absolute value from the greater absolute value. The sum has the same sign as the number with greater absolute value.

Consider the expression $-15+7$.

The objective is to determine the sum of the rational number with opposite sign.

First, take each absolute value from the definition of absolute value.

Therefore,

$$|-15|=15$$
$$|7|=7$$

Now, the difference between $15$ and $7$ is

$15-7=8$

The number $-15$ has a larger absolute value than the number $7$, so their sum is positive.

Therefore,

$-15+7=-8$ [Add]

Hence the required sum is $\boxed{-8}$.

## Answer 4CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(-6)(3)$.

The objective is to determine the product of the given integers.

Now,

$(-6)(3)$ [The number of negative signs is $1$, an odd so the product is negative]

$=-18$ [Multiply the absolute values: $6\cdot 3=18$]

Thus the product is $\boxed{-18}$.

## Answer 4PQ.

Since every subtraction problem can be expressed as an addition problem, to subtract a rational number, add its additive inverse.

For any numbers $a$ and $b$, $a-b=a+(-b)$.

Where $(-b)$ is the additive inverse of $b$.

Again to add rational numbers with the positive sign, add the absolute values of these numbers. The sign will be positive.

Consider the expression $27-(-12)$.

The objective is to determine the difference of the rational numbers.

To subtract $(-23)$ from $16$, add the additive inverse of $(-23)$ with $16$.

Therefore,

$27-(-12)$

$=27+12$ [Additive inverse of $-12$ is $(-(-12))=12$]

$=29$ [Add. Both the numbers are positive]

Hence the required difference is $\boxed{29}$.

## Answer 5CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(5)(-8)$.

The objective is to determine the product of the given integers.

Now,

$(5)(-8)$ [The number of negative signs is $1$, an odd so the product is negative]

$=-40$ [Multiply the absolute values: $5\cdot 8=40$]

Thus the product is $\boxed{-40}$.

## Answer 5PQ.

To add rational numbers with the negative sign, add the absolute values of these numbers and then place a negative sign before the value.

Consider the expression $-6.05+(-2.1)$.

The objective is to determine the sum of the rational number with same sign.

Since both numbers being added are negative, the sum will be negative.

First, take each absolute value from the definition of absolute value.

Therefore,

$$|-6.05|=6.05$$
$$|-2.1|=2.1$$

Then add the absolute values.

$$\begin{aligned}|-6.05|+|-2.1|&=6.05+2.1\\&=8.15\end{aligned}$$

Finally, since both numbers are negative, the sum is negative.

Therefore,

$-6.05+(-2.1)=-8.15$ [Add]

Hence the required sum is $\boxed{-8.15}$.

## Answer 6CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(4.5)(2.3)$.

The objective is to determine the product of the given numbers.

Now,

$(4.5)(2.3)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=10.35$ [Multiply the absolute values: $(4.5)(2.3)=10.35$]

Thus the product is $\boxed{10.35}$.

## Answer 6PQ.

Since every subtraction problem can be expressed as an addition problem, to subtract a rational number, add its additive inverse.

For any numbers $a$ and $b$, $a-b=a+(-b)$.

Where $(-b)$ is the additive inverse of $b$.

Again to add rational numbers with the opposite sign, subtract the lesser absolute value from the greater absolute value. The sum has the same sign as the number with greater absolute value.

Consider the expression $-\frac{3}{4}-\left(-\frac{2}{5}\right)$.

The objective is to determine the difference of the rational numbers.

To subtract $\left(-\frac{2}{5}\right)$ from $\left(-\frac{3}{4}\right)$, add the additive inverse of $\left(-\frac{2}{5}\right)$ with $\left(-\frac{3}{4}\right)$.

Therefore,

$-\frac{3}{4}-\left(-\frac{2}{5}\right)$

$=-\frac{3}{4}+\frac{2}{5}$ [Additive inverse of $\left(-\frac{2}{5}\right)$ is $\left(-\left(-\frac{2}{5}\right)\right)=\frac{2}{5}$]

$=-\frac{15}{20}+\frac{8}{20}$ [Write both fractions with the least common denominator, $20$]

$=-\frac{7}{20}$ [Add. Since $-\frac{15}{20}$ has greater absolute value than $\frac{8}{20}$ so the sum is negative]

Hence the required difference is $\boxed{-\frac{7}{20}}$.

## Answer 7CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(-8.7)(-10.4)$.

The objective is to determine the product of the given numbers.

Now,

$(-8.7)(-10.4)$ [The number of negative signs is $2$, an even so the product is positive]

$=90.48$ [Multiply the absolute values: $(8.7)(10.4)=90.48$]

Thus the product is $\boxed{90.48}$.

## Answer 7PQ.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $-9(-12)$.

The objective is to determine the product of the given numbers.

Now,

$-9(-12)$ [The number of negative signs is $2$, an even so the product is positive]

$=108$ [Multiply the absolute values: $9\cdot 12=108$]

Thus the product is $\boxed{108}$.

## Answer 8CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(\frac{5}{3}\right)\left(-\frac{2}{7}\right)$.

The objective is to determine the product of the given integers.

Now,

$\left(\frac{5}{3}\right)\left(-\frac{2}{7}\right)$ [The number of negative signs is $1$, an odd so the product is negative]

$= -\frac{10}{21}$ [Multiply the absolute values: $\frac{5}{3}\cdot\frac{2}{7}=\frac{10}{21}$]

Thus the product is $\boxed{-\frac{10}{21}}$.

## Answer 8PQ.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(3.8)(-4.1)$.

The objective is to determine the product of the given integers.

Now,

$(3.8)(-4.1)$ [The number of negative signs is $1$, an odd so the product is negative]

$= -15.58$ [Multiply the absolute values: $(3.8)(4.1)=15.58$]

Thus the product is $\boxed{-15.58}$.

## Answer 9CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(-\frac{4}{9}\right)\left(\frac{7}{15}\right)$.

The objective is to determine the product of the given integers.

Now,

$\left(-\frac{4}{9}\right)\left(\frac{7}{15}\right)$ [The number of negative signs is $1$, an odd so the product is negative]

$= -\frac{28}{135}$ [Multiply the absolute values: $\frac{4}{9}\cdot\frac{7}{15}=\frac{28}{135}$]

Thus the product is $\boxed{-\frac{28}{135}}$.

## Answer 9PQ.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $(-8x)(-2y)+(-3y)(z)$.

The objective is to simplify the expression by add the like terms.

Therefore,

$(-8x)(-2y)+(-3y)(z)$

$=(-8)(-2)xy+(-3)yz$ [Rewrite]

$=16xy+(-3)yz$ [Multiply: $(-8)(-2)=16$]

$=16xy-3yz$ [Simplify]

Thus the expression in simple form is $\boxed{16xy-3yz}$.

## Answer 10CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $5s(-6t)$.

The objective is to determine the product of the given expression.

Now,

$5s(-6t)$

$=(5)(s)(-6)(t)$ [Rewrite]

$=(5)(-6)(s)(t)$ [Use commutative property for multiplication of two real numbers: $ab=ba$]

$=(5\cdot(-6))st$ [Multiply the real number and multiply the variable separately]

$=-(5\cdot 6)st$ [The number of negative signs is $1$, an odd so the product is negative]

$=-30st$ [Multiply the absolute values: $5\cdot 6=30$]

Thus the product is $\boxed{-30st}$.

## Answer 10PQ.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $mn+5$.

The objective is to determine the value of the given expression.

Therefore,

$mn+5$ [Given expression]

$=(m)(n)+5$ [Place parentheses around the variable]

$=(2.5)(-3.2)+5$ [Replace $m$ with $2.5$ and $n$ with $(-3.2)$]

$=-8+3$ [Multiply absolute value: $(2.5)(3.2)=8$. Since the numbers of negative sign is odd, so the product is negative]

$=-5$ [Add: $-8+3=-5$, since the magnitude of $(-8)$ is larger than the magnitude of $3$ so the sum is negative]

Hence the required value of the given expression is $\boxed{-5}$.

## Answer 11CU.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $6x(-7y)+(-15xy)$.

The objective is to determine the product of the given expression.

Now,

$6x(-7y)+(-15xy)$

$=6(-7)xy+(-15)xy$ [Rewrite]

$=(-42)xy+(-15)xy$ [Multiply: $6(-7)=-42$]

$=[(-42)+(-15)]xy$ [Use distributive property: $a(b+c)=ab+ac$]

$=-57xy$ [Add: $(-42)+(-15)=-57$]

Thus the expression in simple form is $\boxed{-57xy}$.

## Answer 12CU.

Consider the expression $6m$.

The objective is to determine the value of the given expression.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Therefore,

$6m$ [Given expression]

$=6(m)$ [Place parentheses around the variable]

$=6\left(-\frac{2}{3}\right)$ [Replace $m$ with $\left(-\frac{2}{3}\right)$]

$=-6\left(\frac{2}{3}\right)$ [Since, the numbers are different sign, so the product is negative]

$=-\frac{12}{3}$ [Multiply the absolute values: $6\cdot\frac{2}{3}=\frac{12}{3}$]

$=-\frac{\frac{12}{3}}{\frac{3}{3}}$ [Divide by $3$, $\text{gcf}(12,3)=3$]

$=-4$ [Simplify]

Hence the required value of the given expression is $\boxed{-4}$.

## Answer 13CU.

Consider the expression $np$.

The objective is to determine the value of the given expression.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Therefore,

$np$ [Given expression]

$=(n)(p)$ [Place parentheses around the variable]

$=\left(\frac{1}{2}\right)\left(-3\frac{3}{4}\right)$ [Replace $n$ with $\left(\frac{1}{2}\right)$ and $p$ with $\left(-3\frac{3}{4}\right)$]

$=-\left(\frac{1}{2}\right)\left(3\frac{3}{4}\right)$ [Since, the numbers are different sign, so the product is negative]

$=-\left(\frac{1}{2}\right)\left(\frac{15}{4}\right)$ [Rewrite: $3\frac{3}{4}=\frac{12+3}{4}=\frac{15}{4}$]

$=-\frac{15}{8}$ [Multiply the absolute values: $\frac{1}{2}\cdot\frac{15}{4}=\frac{15}{8}$]

$=-1\frac{7}{8}$ [Rewrite: $\frac{15}{8}=\frac{8+7}{8}=1+\frac{7}{8}=1\frac{7}{8}$]

Hence the required value of the given expression is $\boxed{-1\frac{7}{8}}$.

## Answer 14CU.

Consider the expression $n^2(m+2)$.

The objective is to determine the value of the given expression.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Therefore,

$n^2(m+2)$ [Given expression]

$=(n)^2[(m)+2]$ [Place parentheses around the variable]

$=\left(\frac{1}{2}\right)^2\left[\left(-\frac{2}{3}\right)+2\right]$ [Replace $n$ with $\left(\frac{1}{2}\right)$ and $m$ with $\left(-\frac{2}{3}\right)$]

$=\frac{1}{4}\left[\left(-\frac{2}{3}\right)+\frac{6}{3}\right]$ [Rewrite with same denominator within bracket]

$=\frac{1}{4}\left(\frac{4}{3}\right)$ [Add within bracket: $\left(-\frac{2}{3}\right)+\frac{6}{3}=\frac{-2+6}{3}=\frac{4}{3}$]

$=\frac{4}{12}$ [Multiply]

$=\frac{\frac{4}{4}}{\frac{12}{4}}$ [Divide by $4$, $\text{gcf}(4,12)=4$]

$=\frac{1}{3}$ [Simplify]

Hence the required value of the given expression is $\boxed{\frac{1}{3}}$.

## Answer 15CU.

The worker honeybee makes $\frac{1}{12}$ teaspoon of honey its lifetime.

Then, $675$ honeybees make makes $675\left(\frac{1}{12}\right)$ teaspoon of honey.

Consider the product $675\left(\frac{1}{12}\right)$

The objective is to determine the product.

Now,

$675\left(\frac{1}{12}\right)$ [Both the numbers are positive so the product is positive]

$=\frac{675}{12}$ [Multiply]

$=\frac{\frac{675}{3}}{\frac{12}{3}}$ [Divide denominator and numerator by 3]

$=\frac{225}{4}$ [Simplify]

$=\frac{225}{4}$ [ $\frac{225}{4}=\frac{224+1}{4}=56+\frac{1}{4}=56\frac{1}{4}$ ]

$=56\frac{1}{4}$ [Simplify]

Thus the honeybees make $\boxed{56\frac{1}{4}\text{ teaspoon}}$ of honey.

## Answer 16PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $5(18)$.

The objective is to determine the product of the given numbers.

Now,

$5(18)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=90$ [Multiply the absolute values: $5(18)=90$]

Thus the product is $\boxed{90}$.

## Answer 17PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $8(22)$.

The objective is to determine the product of the given numbers.

Now,

$8(22)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=176$ [Multiply the absolute values: $8 \cdot 22 = 176$]

Thus the product is $\boxed{176}$.

## Answer 18PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $-12(15)$.

The objective is to determine the product of the given integers.

Now,

$-12(15)$ [The number of negative signs is $1$, an odd so the product is negative]

$=-180$ [Multiply the absolute values: $12 \cdot 15 = 180$]

Thus the product is $\boxed{-180}$.

## Answer 19PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $-24(8)$.

The objective is to determine the product of the given integers.

Now,

$-24(8)$ [The number of negative signs is $1$, an odd so the product is negative]

$=-192$ [Multiply the absolute values: $24\cdot 8=192$]

Thus the product is $\boxed{-192}$.

## Answer 20PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $-47(-29)$.

The objective is to determine the product of the given numbers.

Now,

$-47(-29)$ [The number of negative signs is $2$, an even so the product is positive]

$=1363$ [Multiply the absolute values: $47\cdot 29=1363$]

Thus the product is $\boxed{1363}$.

## Answer 21PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $-81(-48)$.

The objective is to determine the product of the given numbers.

Now,

$-81(-48)$ [The number of negative signs is $2$, an even so the product is positive]

$=3888$ [Multiply the absolute values: $81\cdot 48=3888$]

Thus the product is $\boxed{3888}$.

## Answer 22PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(\frac{4}{5}\right)\left(\frac{3}{8}\right)$.

The objective is to determine the product of the given numbers.

Now,

$\left(\frac{4}{5}\right)\left(\frac{3}{8}\right)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=\frac{12}{40}$ [Multiply the absolute values: $\frac{4}{5}\cdot\frac{3}{8}=\frac{12}{40}$]

$=\frac{\frac{12}{4}}{\frac{40}{4}}$ [Divide denominator and numerator by $\text{gcf}(12,40)=4$]

$=\frac{3}{10}$ [Simplify]

Thus the product is $\boxed{\frac{3}{10}}$.

## Answer 23PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(\frac{5}{12}\right)\left(\frac{4}{9}\right)$.

The objective is to determine the product of the given numbers.

Now,

$\left(\frac{5}{12}\right)\left(\frac{4}{9}\right)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=\frac{20}{108}$ [Multiply the absolute values: $\frac{5}{12}\cdot\frac{4}{9}=\frac{20}{108}$]

$=\frac{\frac{20}{4}}{\frac{108}{4}}$ [Divide denominator and numerator by $\gcd(20,108)=4$]

$=\frac{5}{27}$ [Simplify]

Thus the product is $\boxed{\frac{5}{27}}$.

## Answer 24PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(-\frac{3}{5}\right)\left(\frac{5}{6}\right)$.

The objective is to determine the product of the given numbers.

Now,

$\left(-\frac{3}{5}\right)\left(\frac{5}{6}\right)$ [The number of negative signs is $1$, an odd so the product is negative]

$= -\frac{15}{30}$ [Multiply the absolute values: $\frac{3}{5}\cdot\frac{5}{6}=\frac{15}{30}$]

$= -\frac{\frac{15}{15}}{\frac{30}{15}}$ [Divide denominator and numerator by $\gcd(15,30)=15$]

$= -\frac{1}{2}$ [Simplify]

Thus the product is $\boxed{-\frac{1}{2}}$.

## Answer 25PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(-\frac{2}{5}\right)\left(\frac{6}{7}\right)$.

The objective is to determine the product of the given numbers.

Now,

$\left(-\frac{2}{5}\right)\left(\frac{6}{7}\right)$ [The number of negative signs is $1$, an odd so the product is negative]

$=-\frac{12}{35}$ [Multiply the absolute values: $\frac{2}{5}\cdot\frac{6}{7}=\frac{12}{35}$]

Thus the product is $\boxed{-\frac{12}{35}}$.

## Answer 26PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(-3\frac{1}{5}\right)\left(-7\frac{1}{2}\right)$.

The objective is to determine the product of the given numbers.

Now,

$\left(-3\frac{1}{5}\right)\left(-7\frac{1}{2}\right)$ [The number of negative signs is $2$, an even so the product is positive]

$=\frac{16}{5}\cdot\frac{15}{2}$ [Rewrite: $3\frac{1}{5}=\frac{3\cdot5+1}{5}=\frac{16}{5};7\frac{1}{2}=\frac{7\cdot2+1}{2}=\frac{15}{2}$]

$=\frac{240}{10}$ [Multiply the absolute values: $\frac{16}{5}\cdot\frac{15}{2}=\frac{240}{10}$]

$=\frac{\frac{240}{10}}{\frac{10}{10}}$ [Divide denominator and numerator by $\operatorname{gcf}(240,10)=10$]

$=24$ [Simplify]

Thus the product is $\boxed{24}$.

## Answer 27PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\left(-1\frac{4}{5}\right)\left(-2\frac{1}{2}\right)$.

The objective is to determine the product of the given numbers.

Now,

$\left(-1\frac{4}{5}\right)\left(-2\frac{1}{2}\right)$ [The number of negative signs is $2$, an even so the product is positive]

$=\frac{9}{5}\cdot\frac{5}{2}$ [Rewrite: $1\frac{4}{5}=\frac{1\cdot5+4}{5}=\frac{9}{5};2\frac{1}{2}=\frac{2\cdot2+1}{2}=\frac{5}{2}$]

$=\frac{45}{10}$ [Multiply the absolute values: $\frac{9}{5}\cdot\frac{5}{2}=\frac{45}{10}$]

$=\frac{\frac{45}{5}}{\frac{10}{5}}$ [Divide denominator and numerator by $\text{gcf}(45,10)=5$]

$=\frac{9}{2}$ [Simplify]

$=4\frac{1}{2}$ [Rewrite: $\frac{9}{2}=\frac{8+1}{2}=4+\frac{1}{2}=4\frac{1}{2}$]

Thus the product is $\boxed{4\frac{1}{2}}$.

## Answer 28PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $7.2(0.2)$.

The objective is to determine the product of the given numbers.

Now,

$7.2(0.2)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=1.44$ [Multiply the absolute values: $(7.2)\cdot(0.2)=1.44$]

Thus the product is $\boxed{1.44}$.

## Answer 29PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $6.5(0.13)$.

The objective is to determine the product of the given numbers.

Now,

$6.5(0.13)$ [The number of negative signs is $0$, i.e. both numbers are positive, so the product is positive]

$=0.845$ [Multiply the absolute values: $(6.5)\cdot(0.13)=0.845$]

Thus the product is $\boxed{0.845}$.

## Answer 30PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(-5.8)(2.3)$.

The objective is to determine the product of the given integers.

Now,

$(-5.8)(2.3)$ [The number of negative signs is $1$, an odd so the product is negative]

$=-13.34$ [Multiply the absolute values: $(5.8)(2.3)=13.34$]

Thus the product is $\boxed{-13.34}$.

## Answer 31PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $(-0.075)(6.4)$.

The objective is to determine the product of the given integers.

Now,

$(-0.075)(6.4)$ [The number of negative signs is $1$, an odd so the product is negative]

$= -0.48$ [Multiply the absolute values: $(0.075)(6.4) = 0.48$]

Thus the product is $\boxed{-0.48}$.

## Answer 32PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\frac{3}{5}(-5)(-2)$.

The objective is to determine the product of the given numbers.

Now,

$\frac{3}{5}(-5)(-2)$ [The number of negative signs is $2$, an even so the product is positive]

$= \frac{30}{5}$ [Multiply the absolute values: $\frac{3}{5} \cdot 5 \cdot 2 = \frac{30}{5}$]

$= \frac{\frac{30}{5}}{\frac{5}{5}}$ [Divide denominator and numerator by $\text{gcf}(30,5) = 5$]

$= 6$ [Simplify]

Thus the product is $\boxed{6}$.

## Answer 33PA.

When multiply integers, first determine the sign of the product and then multiply absolute values.

Now, for all nonzero numbers:

1. The product will be positive if there are even numbers of negative signs.

2. The product will be negative if there are an odd number of negative signs.

Consider the product $\frac{2}{11}(-11)(-4)$.

The objective is to determine the product of the given numbers.

Now,

$\frac{2}{11}(-11)(-4)$ [The number of negative signs is $2$, an even so the product is positive]

$=\frac{88}{11}$ [Multiply the absolute values: $\frac{2}{11}\cdot 11\cdot 4=\frac{88}{11}$]

$=\frac{\frac{88}{11}}{\frac{11}{11}}$ [Divide denominator and numerator by $\text{gcf}(88,11)=11$]

$=8$ [Simplify]

Thus the product is $\boxed{8}$.

## Answer 34PA.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $6(-2x)-14x$.

The objective is to simplify the expression by add the like terms.

Therefore,

$6(-2x)-14x$ [Given expression]

$=6(-2x)+(-14x)$ [Change subtraction to addition of the opposite]

$=(-12x)+(-14x)$ [Multiply: $6(-2)=-12$]

$=[(-12)+(-14)]x$ [Use distributive property: $a(b+c)=ab+ac$]

$=-26xy$ [Add numerical coefficient: $(-12)+(-14)=-26$]

Thus the expression in simple form is $\boxed{-26xy}$.

## Answer 35PA.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $5(-4n)-25n$.

The objective is to simplify the expression by add the like terms.

Therefore,

$5(-4n)-25n$ [Given expression]

$=5(-4n)+(-25n)$ [Change subtraction to addition of the opposite]

$=(-20n)+(-25n)$ [Multiply: $5(-4)=-20$]

$=[(-20)+(-25)]n$ [Use distributive property: $a(b+c)=ab+ac$]

$=-45n$ [Add numerical coefficient: $(-20)+(-25)=-45$]

Thus the expression in simple form is $\boxed{-45n}$.

## Answer 36PA.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $5(2x-x)$.

The objective is to simplify the expression by add the like terms.

Therefore,

$5(2x-x)$ [Given expression]

$=5[2x+(-x)]$ [Change subtraction to addition of the opposite]

$=5[(2+(-1))x]$ [Use distributive property: $a(b+c)=ab+ac$]

$=5[(1)x]$ [Add the numerical coefficient: $(2)+(-1)=1$]

$=[5(1)]x$ [Use associative property: $a(bc)=(ab)c$]

$=5x$ [Multiply the numerical coefficient: $5\cdot 1=5$]

Thus the expression in simple form is $\boxed{5x}$.

## Answer 37PA.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $-7(3d+d)$.

The objective is to simplify the expression by add the like terms.

Therefore,

$-7(3d+d)$ [Given expression]

$=-7(3d+1d)$ [Rewrite: $x=1x$]

$=-7[(3+1)d]$ [Use distributive property: $a(b+c)=ab+ac$]

$=-7(4d)$ [Add the numerical coefficient: $3+1=4$]

$=(-7(4))d$ [Use associative property: $a(bc)=(ab)c$]

$=-28d$ [Multiply the numerical coefficient: $7\cdot 4=28$]

Thus the expression in simple form is $\boxed{-28d}$.

## Answer 38PA.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $-2a(-3c)+(-6y)(6r)$.

The objective is to simplify the expression by add the like terms.

Therefore,

$-2a(-3c)+(-6y)(6r)$

$=[(-2)(-3)]ac+[(-6)6]yr$ [Rewrite]

$=6ac+(-36)yr$ [Multiply: $(-2)(-73)=6\,;\,(-6)6=-36$]

$=6ac-36yr$ [Multiply: $(-2)(-73)=6\,;\,(-6)6=-36$]

Thus the expression in simple form is $\boxed{6ac-36yr}$.

## Answer 39PA.

To simplify expression containing like terms, 1st combine like terms.

To combine like terms add or subtract the numerical coefficients of the like terms, then rearrange the terms. The variable part stays the same.

Consider the expression $7m(-3n)+3s(-4t)$.

The objective is to simplify the expression by add the like terms.

Therefore,

$7m(-3n)+3s(-4t)$

$=[7(-3)]mn+[3(-4)]st$ [Rewrite]

$=(-21)mn+(-12)st$ [Multiply: $7(-3)=-21$ ; $3(-4)=-12$]

$=-21mn-12st$ [Rewrite]

Thus the expression in simple form is $\boxed{-21mn-12st}$.

## Answer 40PA.

Consider the table that lists the closing prices of a company's stock over a one-week period.

| **Closing Stock Price(S)** | |
|---|---|
| **Day** | **Price** |
| **1** | **64.38** |
| **2** | **63.66** |
| **3** | **61.66** |
| **4** | **61.69** |
| **5** | **62.34** |

The objective is to determine the change in price of 35 shares of this stock from day 2 to day 3.

Change of price of the stock from day $2$ to day $3$ in each share is $=\$(63.66-61.66)$.

To subtract $61.66$ from $63.66$, add the additive inverse of $61.66$ with $63.66$.

Therefore,

$= 63.66 - 61.66$

$= 63.66 + (-61.66)$ [Additive inverse of $61.66$ is $(-61.66)$]

$= 2$ [Add. Since $63.66$ has greater absolute value than $(-61.66)$ so the sum is positive]

Now, price of $35$ share is $= 35(\$2)$

$= \$70$ [Multiply]

Thus, the change in price is $\boxed{\$70}$.

## Answer 41PA.

Consider the table that lists the closing prices of a company's stock over a one-week period.

| **Closing Stock Price(S)** | |
|---|---|
| **Day** | **Price** |
| **1** | **64.38** |
| **2** | **63.66** |
| **3** | **61.66** |
| **4** | **61.69** |
| **5** | **62.34** |

You bought 100 shares of this stock and on day 1 and sold half of them on day 4.

The objective is to determine the amount you gain or loss.

Change of price of the stock from day $4$ to day $1$ in each share is $= \$(61.69 - 64.38)$.

To subtract $64.38$ from $61.69$, add the additive inverse of $64.38$ with $61.69$.

Therefore,

$61.69 - 64.38$

$= 61.69 + (-64.38)$ [Additive inverse of $64.38$ is $(-64.38)$]

$= -2.69$ [Add. Since $(-64.38)$ has greater absolute value than $61.69$ so the sum is negative]

Negative sign shows that, you loss.

Amount of loss in each share is $2.69.

Now,

Half of 100 $= \frac{1}{2}(100) = 50$

Now, loss in $50$ share is $= 50(\$2.69)$

$= \$134.50$ [Multiply]

Thus, amount of loss is $\boxed{\$134.50}$.

## Answer 42PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $-5c^2$.

The objective is to determine the value of the given expression.

Therefore,

$-5c^2$ [Given expression]

$= -5(c)^2$ [Place parentheses around the variable]

$= -5(4.5)^2$ [Replace $c$ with $4.5$]

$= -5(20.25)$ [Rewrite: $(4.5)^2 = 20.25$]

$= -101.25$ [Multiply. Since the numbers are opposite sign, so the product is negative]

Hence the required value of the given expression is $\boxed{-101.25}$.

## Answer 43PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $-2b^2$.

The objective is to determine the value of the given expression.

Therefore,

$-2b^2$ [Given expression]

$=-2(b)^2$ [Place parentheses around the variable]

$=-2(3.9)^2$ [Replace $b$ with $3.9$]

$=-2(15.21)$ [Rewrite: $(3.9)^2=15.21$]

$=-30.42$ [Multiply. Since the numbers are opposite sign, so the product is negative]

Hence the required value of the given expression is $\boxed{-30.42}$.

## Answer 44PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $-4ab$.

The objective is to determine the value of the given expression.

Therefore,

$-4ab$ [Given expression]

$=-4(a)(b)$ [Place parentheses around the variable]

$=-4(-2.7)(3.9)$ [Replace $a$ with $-2.7$ and $b$ with $3.9$ ]

$=42.12$ [Multiply absolute value: $4(2.7)(3.9)=42.12$. Since the numbers of negative sign is even, so the product is positive]

Hence the required value of the given expression is $\boxed{42.12}$.

## Answer 45PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $-5cd$.

The objective is to determine the value of the given expression.

Therefore,

$-5cd$ [Given expression]

$=-5(c)(d)$ [Place parentheses around the variable]

$=-5(4.5)(-0.2)$ [Replace $c$ with $4.5$ and $d$ with $-0.2$ ]

$=4.5$ [Multiply absolute value: $5(4.5)(0.2)=4.5$. Since the numbers of negative sign is even, so the product is positive]

Hence the required value of the given expression is $\boxed{4.5}$.

## Answer 46PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $ad-8$.

The objective is to determine the value of the given expression.

Therefore,

$ad-8$ [Given expression]

$=(a)(d)-8$ [Place parentheses around the variable]

$=(-2.7)(-0.2)-8$ [Replace $a$ with $(-2.7)$ and $d$ with $(-0.2)$]

$=0.54-8$ [Multiply absolute value: $(2.7)(0.2)=0.54$. Since the numbers of negative sign is even, so the product is positive]

$=0.54+(-8)$ [Change subtraction to addition of the opposite]

$=-7.46$ [Add the numerical coefficient: $0.54+(-8)=-7.46$]

Hence the required value of the given expression is $\boxed{-7.46}$.

## Answer 47PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the expression $ab-8$.

The objective is to determine the value of the given expression.

Therefore,

$ab-3$ [Given expression]

$=(a)(b)-3$ [Place parentheses around the variable]

$=(-2.7)(3.9)-3$ [Replace $a$ with $-2.7$ and $b$ with $3.9$]

$=10.53-3$ [Multiply absolute value: $(2.7)(3.9)=10.53$. Since the numbers of negative sign is even, so the product is positive]

$=10.53+(-3)$ [Change subtraction to addition of the opposite]

$=7.53$ [Add the numerical coefficient: $(2)+(-1)=1$]

Hence the required value of the given expression is $\boxed{7.53}$.

## Answer 48PA.

Consider the expression $d^2(b-2a)$.

The objective is to determine the value of the given expression.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Therefore,

$d^2(b-2a)$ [Given expression]

$=(d)^2[(b)-2(a)]$ [Place parentheses around the variable]

$=(-0.2)^2[(3.9)-2(-2.7)]$ [Replace $a$ with $(-2.7)$, $b$ with $(3.9)$ and $d$ with $(-0.2)$]

$=(0.04)[(3.9)-(-5.4)]$ [Rewrite: $(0.2)^2=0.04$ and multiply within the bracket: $2(-2.7)=-5.4$]

$=(0.04)(3.9+5.4)$ [Additive inverse of $(-5.4)$ is $5.4$]

$=(0.04)(9.3)$ [Add within bracket: $3.9+5.4=9.3$]

$=0.372$ [Multiply]

Hence the required value of the given expression is $\boxed{0.372}$.

## Answer 49PA.

Consider the expression $b^2(d-3c)$.

The objective is to determine the value of the given expression.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Therefore,

$b^2(d-3c)$ [Given expression]

$=(b)^2[(d)-3(c)]$ [Place parentheses around the variable]

$=(3.9)^2[(-0.2)-3(4.5)]$ [Replace $a$ with $(-2.7)$, $b$ with $(3.9)$ and $c$ with $(4.5)$]

$=(15.21)[(-0.2)-(13.5)]$ [Rewrite: $(0.2)^2=0.04$ and multiply within the bracket: $3(4.5)=13.5$]

$=(15.21)[(-0.2)+(-13.5)]$ [Additive inverse of $13.5$ is $(-13.5)$]

$=(15.21)(-13.7)$ [Add the absolute value within bracket: $0.2+13.5=13.7$. Sum of two negative numbers is negative]

$=208.377$ [Multiply]

Hence the required value of the given expression is $\boxed{208.377}$.

## Answer 51PA.

The price dropped $\$34.95$ each month for $7$ months.

Then total drop on price in $7$ months is $=7(\$34.95)$

$=\$244.65$ [Multiply]

The objective is to determine the price of the computer after $7$ months.

The starting price of the computer is $\$1450$.

Therefore,

Price after $7$ months is $=\$1450-\$244.65$

Now,

$1450-244.65$

$=1450+(-244.65)$ [Additive inverse of $244.65$ is $(-244.65)$]

$=1205.35$ [Add. The number with greatest magnitude is positive so the sum is positive]

Thus the price of the computer after $7$ months is $\boxed{\$1205.35}$.

## Answer 52PA.

Per Lindstrand achieved the altitude $64,997$ feet.

Temperature drops about $2^\circ \text{F}$ for every rise of $530$ feet in altitude.

Then, temperature change $= \frac{64,997}{530}$ times.

The objective is to determine the change in temperature.

Now,

$$\frac{64,997}{530}$$

$\approx 122$ [Divide]

Temperature drops about $2^\circ \text{F}$ in each time.

Then total temperature change $= 122(2^\circ \text{F})$.

Now,

$$122(2).$$

$= 244$ [Multiply]

Thus, the difference of temperature is $\boxed{244^\circ \text{F}}$.

## Answer 53PA.

American uses about $2.5$ million plastic bottles every hour.

$$1 \text{ day} = 24 \text{ hour}$$

Then, uses of plastic bottle in one day are $24(25 \text{ million})$.

The objective is to calculate the amount of plastic use in one day by the American.

Now,

$$24(25)$$

$= 60$ [Multiply. Since both the number is positive, so the product is positive]

Thus, the plastic use in one day is about $\boxed{60 \text{ million}}$.

**Answer 54PA.**

American uses about $2.5$ million plastic bottles every hour.

$1\,\text{day} = 24\,\text{hour}$

Then, uses of plastic bottle in one day are $24(25\,\text{million})$.

The objective is to calculate the amount of plastic use in one week by the American.

Now,

$24(25)$

$= 60$ [Multiply. Since both the number is positive, so the product is positive]

Again,

$1\,\text{week} = 7\,\text{day}$

Then, uses of plastic bottle in one week are $7(60\,\text{million})$.

Now,

$7(60)$

$= 420$ [Multiply. Since both the number is positive, so the product is positive]

Thus, the plastic use in one week is about $\boxed{420\,\text{million}}$.

**Answer 55PA.**

An even number of negative numbers are multiplied.

Product of two negative numbers is positive.

Since, even number of numbers can be partitioned into groups of two, so the product is positive.

For example, consider the product $(-2)(-3)(-4)(-5)(-6)(-7)$.

Therefore,

$(-2)(-3)(-4)(-5)(-6)(-7)$

$= [(-2)(-3)][(-4)(-5)][(-6)(-7)]$ [Partition 6 negative numbers into group of 2]

$= (6)(20)(42)$ [Multiply the absolute value in each bracket. Product of two negative numbers is positive]

$= 5040$ [All the numbers are positive, so the product is positive]

Thus the explanation.

## Answer 57PA.

Consider the expression $2y-4x$.

It cannot be simplified further.

Consider the expression $-2x(4y)$.

Now,

$$-2x(4y)=(-2\cdot4)xy$$
$$=-8xy$$

Consider the expression $(-4)^2xy$.

Now,

$$(-4)^2xy=16xy$$

Consider the expression $-4x(-2y)$.

Now,

$$-4x(-2y)=(-4\cdot(-2))xy$$
$$=8xy$$

Hence the correct option is **(B)**.

## Answer 58PA.

To evaluate the given expression, replace the variable with the given numbers and then perform the indicated operations.

Consider the equation $m=-2ab$.

The objective is to determine the value of the given expression.

Now,

$m=-2ab$ [Given expression]

$=-2(a)(b)$ [Place parentheses around the variable]

$=-2(-4)(6)$ [Replace $a$ with $(-4)$ and $b$ with $6$]

$=48$ [Multiply. Since the numbers of negative sign is even, so the product is positive]

Hence the required value of the given expression is $\boxed{-30.42}$.

## Answer 59MYS.

To add rational numbers with negative sign, add the absolute values of these numbers and then place a negative sign before the value.

Consider the expression $-6.5+(-5.6)$.

The objective is to determine the sum of the rational number with same sign.

Since both numbers being added are negative, the sum will be negative.

First, take each absolute value from the definition of absolute value.

Therefore,

$$|-6.5| = 6.5$$
$$|-5.6| = 5.6$$

Then add the absolute values.

$$\begin{aligned}|-6.5|+|-5.6| &= 6.5+5.6 \\ &= 12.1\end{aligned}$$

Finally, since both numbers are negative, the sum is negative.

Therefore,

$-6.5+(-5.6) = -12.1$ [Add]

Hence the required sum is $\boxed{-12.1}$.

**Answer 60MYS.**

To add rational numbers with the opposite sign, subtract the lesser absolute value from the greater absolute value. The sum has the same sign as the number with greater absolute value.

Consider the expression $\frac{4}{5}+\left(-\frac{3}{4}\right)$.

The objective is to determine the sum of the rational number with opposite sign.

First, take each absolute value from the definition of absolute value.

Therefore,

$$\left|\frac{4}{5}\right|=\frac{4}{5}$$
$$\left|-\frac{3}{4}\right|=\frac{3}{4}$$

Now, the difference between $\frac{4}{5}$ and $\frac{3}{4}$ is

$$\begin{aligned}&\frac{4}{5}-\frac{3}{4}\\ &=\frac{16}{20}-\frac{15}{20} && \text{Write both fraction with the least common denominato , 20}\\ &=\frac{1}{20} && \text{Subtract}\end{aligned}$$

The number $\frac{4}{5}$ has a larger absolute value than the number $-\frac{3}{4}$, so their sum is positive.

Therefore,

$\frac{4}{5}+\left(-\frac{3}{4}\right)=\frac{1}{20}$ [Add]

Hence the required sum is $\boxed{\frac{1}{20}}$.

## Answer 61MYS.

Since every subtraction problem can be expressed as an addition problem, to subtract a rational number, add its additive inverse.

For any numbers $a$ and $b$, $a-b=a+(-b)$.

Where $(-b)$ is the additive inverse of $b$.

Again to add rational numbers with the positive sign, add the absolute values of these numbers. The sign will be positive.

Consider the expression $42-(-14)$.

The objective is to determine the difference of the rational numbers.

To subtract $-14$ from $42$, add the additive inverse of $-14$ with $42$.

Therefore,

$42-(-14)$

$=42+14$ [Additive inverse of $(-14)$ is $(-(-14))=14$]

$=56$ [Add. Both the numbers are positive]

Hence the required difference is $\boxed{56}$.

## Answer 62MYS.

Since every subtraction problem can be expressed as an addition problem, to subtract a rational number, add its additive inverse.

For any numbers $a$ and $b$, $a-b=a+(-b)$.

Where $(-b)$ is the additive inverse of $b$.

To add rational numbers with the negative sign, add the absolute values of these numbers and then place a negative sign before the value.

Consider the expression $-14.2-6.7$.

The objective is to determine the difference of the rational number.

To subtract $6.7$ from $(-14.2)$, add the additive inverse of $6.7$ with $(-14.2)$.

Therefore,

$$-14.2-6.7$$

$=-14.2+(-6.7)$ [Additive inverse of $6.7$ is $(-6.7)$]

First, take absolute value.

Therefore,

$$|-14.2|=14.2$$
$$|-6.7|=6.7$$

Then add the absolute values.

$$\begin{aligned}|-14.2|+|-6.7| &= 14.2+6.7\\ &= 20.9\end{aligned}$$

Therefore,

$-14.2-6.7 \;\; =-20.9$ [Add. Since both numbers are negative, the sum must be negative]

Hence the required difference is $\boxed{-20.9}$.

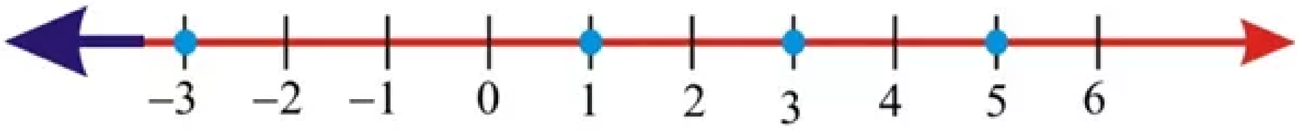
## Answer 63MYS.

Consider the set of numbers $\{\ldots\ldots,-3,-1,1,3,5\}$.

The objective is graph the set of numbers on the number line.

To graph the number on the number line, plot the points and indicate by a dot $(\bullet)$.

The bold arrow $(\longleftarrow)$ on the right means that the graph continues indefinitely in that direction.




## Answer 64MYS.

Consider the set of numbers $\{-2.5,-1.5,0.5,4.5\}$.

The objective is graph the set of numbers on the number line.

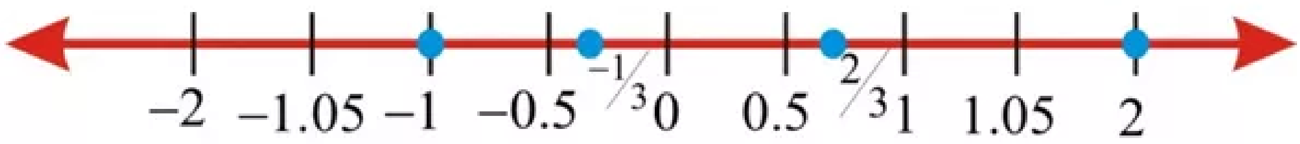
To graph the number on the number line, plot the points and indicate by a dot $(\bullet)$.


## Answer 65MYS.

Consider the set of numbers $\left\{-1,-\frac{1}{3},\frac{2}{3},2\right\}$.

The objective is graph the set of numbers on the number line.

To graph the number on the number line, plot the points and indicate by a dot $(\bullet)$.




## Answer 67MYS.

Consider the following inequality:

$2x-4\geq 6.$

The objective is to write a counter example for the given statement $2x-4\geq 6$, then $x>5$.

Isolate the variable $x$ by doing the same operations to each side of the inequality.

Use the property of the inequality as follows:

$$
\begin{aligned}
2x-4 &\geq 6 \\
2x-4+4 &\geq 6+4 && a\geq b \Rightarrow a+c\geq b+c \\
2x &\geq 10 && \text{Simplify on both side} \\
\frac{2x}{2} &\geq \frac{10}{2} && a\geq b \text{ and } c\geq 0 \Rightarrow \frac{a}{c}\geq\frac{b}{c} \\
x &\geq 5 && \text{Simplify on both side}
\end{aligned}
$$

Thus, the required answer is $\boxed{x=5}$.

## Answer 69MYS.

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $\frac{5}{8} \div 2$.

The objective is to divide the given fraction.

Now,

$\frac{5}{8} \div 2$ [Given division]

$= \frac{5}{8} \cdot \frac{1}{2}$ [Invert $2$ and change division to multiplication]

$= \frac{5}{8 \cdot 2}$ [Multiply on the denominator]

$= \frac{5}{16}$ [Simplify]

Therefore, the required quotient is $\boxed{\frac{5}{16}}$.

## Answer 70MYS.

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $\frac{2}{3} \div 4$.

The objective is to divide the given fraction.

Now,

$\frac{2}{3} \div 4$ [Given division]

$= \frac{2}{3} \cdot \frac{1}{4}$ [Invert $4$ and change division to multiplication]

$= \frac{2 \cdot 1}{3 \cdot 4}$ [Multiply on the denominator and numerator]

$= \frac{2}{12}$ [Simplify]

$= \frac{\frac{2}{2}}{\frac{12}{2}}$ [Divide denominator and numerator by $\gcd(2,12) = 2$]

$= \frac{1}{6}$ [Simplify]

Therefore, the required quotient is $\boxed{\frac{1}{6}}$.

## Answer 71MYS.

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $5 \div \frac{3}{4}$.

The objective is to divide the given fraction.

Now,

$5 \div \frac{3}{4}$ [Given division]

$= 5 \cdot \frac{4}{3}$ [Invert $\frac{3}{4}$ and change division to multiplication]

$= \frac{5 \cdot 4}{3}$ [Multiply on the numerator]

$= \frac{20}{3}$ [Simplify]

$= 6\frac{2}{3}$ [ $\frac{20}{3} = \frac{18+2}{3} = 6 + \frac{2}{3} = 6\frac{2}{3}$]

Therefore, the required quotient is $\boxed{6\frac{2}{3}}$.

## Answer 72MYS.

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $1 \div \frac{2}{5}$.

The objective is to divide the given fraction.

Now,

$1 \div \frac{2}{5}$ [Given division]

$= 1 \cdot \frac{5}{2}$ [Invert $\frac{2}{5}$ and change division to multiplication]

$= \frac{1 \cdot 5}{2}$ [Multiply on the numerator]

$= \frac{5}{2}$ [Simplify]

$= 2\frac{1}{2}$ [ $\frac{5}{2} = \frac{4+1}{2} = 2 + \frac{1}{2} = 2\frac{1}{2}$]

Therefore, the required quotient is $\boxed{2\frac{1}{2}}$.

## Answer 73MYS.

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $\frac{1}{2} \div \frac{3}{8}$.

The objective is to divide the given fraction.

Now,

$\frac{1}{2} \div \frac{3}{8}$ [Given division]

$= \frac{1}{2} \cdot \frac{8}{3}$ [Invert $\frac{3}{4}$ and change division to multiplication]

$= \frac{8}{2 \cdot 3}$ [Multiply on the numerator]

$= \frac{8}{6}$ [Simplify: $8 \cdot 2 = 16$]

$= \frac{\frac{8}{2}}{\frac{6}{2}}$ [Divide denominator and numerator by $\text{gcf}(8,6) = 2$]

$= \frac{4}{3}$ [Simplify]

$= 1\frac{1}{3}$ [ $\frac{4}{3} = \frac{3+1}{3} = 1 + \frac{1}{3} = 1\frac{1}{3}$ ]

Therefore, the required quotient is $\boxed{1\frac{1}{3}}$.

**Answer 74MYS.**

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $\frac{7}{9} \div \frac{5}{6}$.

The objective is to divide the given fraction.

Now,

$\frac{7}{9} \div \frac{5}{6}$ [Given division]

$= \frac{7}{9} \cdot \frac{6}{5}$ [Invert $\frac{5}{6}$ and change division to multiplication]

$= \frac{7 \cdot 6}{9 \cdot 5}$ [Multiply on the denominator and numerator]

$= \frac{42}{45}$ [Simplify]

$= \frac{\frac{42}{3}}{\frac{45}{3}}$ [Divide denominator and numerator by $\gcd(42, 45) = 3$]

$= \frac{14}{15}$ [Simplify]

Therefore, the required quotient is $\boxed{\frac{14}{15}}$.

**Answer 75MYS.**

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $\frac{4}{5} \div \frac{6}{5}$.

The objective is to divide the given fraction.

Now,

$\frac{4}{5} \div \frac{6}{5}$ [Given division]

$= \frac{4}{5} \cdot \frac{5}{6}$ [Invert $\frac{6}{5}$ and change division to multiplication]

$= \frac{4 \cdot 5}{5 \cdot 6}$ [Multiply on the denominator and numerator]

$= \frac{20}{30}$ [Simplify]

$= \frac{\frac{20}{10}}{\frac{30}{10}}$ [Divide denominator and numerator by $\gcd(20, 30) = 10$]

$= \frac{2}{3}$ [Simplify]

Therefore, the required quotient is $\boxed{\frac{2}{3}}$.

## Answer 76MYS.

To divide two fractions with like signs, divide their absolute values. The answer is positive.

Consider the complex fraction $\frac{7}{8} \div \frac{2}{3}$.

The objective is to divide the given fraction.

Now,

$\frac{7}{8} \div \frac{2}{3}$ [Given division]

$= \frac{7}{8} \cdot \frac{3}{2}$ [Invert $\frac{2}{3}$ and change division to multiplication]

$= \frac{7 \cdot 3}{8 \cdot 2}$ [Multiply on the denominator and numerator]

$= \frac{21}{16}$ [Simplify]

$= 1\frac{5}{16}$ [ $\frac{21}{16} = \frac{16+5}{16} = 1 + \frac{5}{16} = 1\frac{5}{16}$]

Therefore, the required quotient is $\boxed{1\frac{5}{16}}$.