

**1. Which of the following are positive rational numbers?**

**$5/8, -3/11, 0/5, 7, -4, -3/-13, -17/-6, 9/-20.$**

**Solution:**

The positive rational numbers are:

$5/8, 0/5, 7, -3/-13, -17/-6.$

**2. Which of the following are negative rational numbers?**

**$-5/7, 4/-3, -3/-11, -6, 9, 0, -28/5, 31/7.$**

**Solution:**

The negative rational numbers are:

$-5/7, 4/-3, -6, -28/5.$

**3. Find four rational numbers equivalent to each of the following rational numbers:**

**(i)  $3/-7$**

**(ii)  $-5/-9$**

**Solution:**

**(i)  $3/-7$**

Let us find the equivalent numbers:

Firstly multiply and divide by 2,

$$(3/-7) \times (2/2) = 6/-14$$

Similarly, multiply and divide by 3,

$$(3/-7) \times (3/3) = 9/-21$$

Multiply and divide by 4,

$$(3/-7) \times (4/4) = 12/-28$$

Multiply and divide by 5,

$$(3/-7) \times (5/5) = 15/-35$$

Hence, four equivalent rational numbers are:

$6/-14, 9/-21, 12/-28, 15/-35$

**(ii)  $-5/-9$**

Let us find the equivalent numbers:

Firstly multiply and divide by 2,

$$(-5/-9) \times (2/2) = -10/-18 = 10/18$$

Similarly, multiply and divide by 3,  
 $(-5/-9) \times (3/3) = -15/-27 = 15/27$

Multiply and divide by 4,  
 $(-5/-9) \times (4/4) = -20/-36 = 20/36$

Multiply and divide by 5,  
 $(-5/-9) \times (5/5) = -25/-45 = 25/45$

Hence, four equivalent rational numbers are:  
10/18, 15/27, 20/36, 25/45

**4. Write each of the following rational numbers with positive denominators:**

(i)  $4/-9$

(ii)  $17/-33$

(iii)  $-15/-38$

**Solution:**

(i)  $4/-9 = -4/9$

(ii)  $17/-33 = -17/33$

(iii)  $-15/-38 = 15/38$

**5. Write next four rational numbers in each of the following patterns:**

(i)  $-1/4, -2/8, -3/12, -4/16, \dots$

(ii)  $2/-3, -4/6, -6/9, -8/12, \dots$

**Solution:**

(i)  $-1/4, -2/8, -3/12, -4/16, \dots$

The next four rational numbers in the same patterns are:

$-1/4, -2/8, -3/12, -4/16, -5/20, -6/24, -7/28, -8/32$

(ii)  $2/-3, -4/6, -6/9, -8/12, \dots$

The next four rational numbers in the same patterns are:

$2/-3, -4/6, -6/9, -8/12, -10/15, -12/18, -14/21, -16/24$

**6. Which of the following pairs of rational numbers are equal?**

(i)  $-3/-7$  and  $15/35$

(ii)  $-6/8$  and  $10/-15$

(iii)  $6/-10$  and  $-12/20$

**Solution:**

**(i)**  $-3/-7$  and  $15/35$

Let us simplify, we get

$-3/-7$  and  $15/35$

$$(-3/-7) = (15/35)$$

Let us cross multiply, we get

$$(-3 \times 35) = (15 \times -7)$$

$$-105 = -105$$

$\therefore -3/-7$  and  $15/35$  are equal pairs.

**(ii)**  $-6/8$  and  $10/-15$

Let us simplify, we get

$-6/8$  and  $10/-15$

$$(-6/8) = (10/-15)$$

Let us cross multiply, we get

$$(-6 \times -15) = (10 \times 8)$$

$$90 = 80$$

$\therefore -6/8$  and  $10/-15$  are not equal pairs.

**(iii)**  $6/-10$  and  $-12/20$

Let us simplify, we get

$6/-10$  and  $-12/20$

$$(6/-10) = (-12/20)$$

Let us cross multiply, we get

$$(6 \times 20) = (-12 \times -10)$$

$$120 = 120$$

$\therefore 6/-10$  and  $-12/20$  are equal pairs.

**7. Which of the following pairs represent the same rational number?**

**(i)**  $-7/21$ ,  $3/9$

**(ii)**  $-16/20$ ,  $20/-25$

**(iii)**  $-3/5$ ,  $-12/20$

**(iv)**  $8/-5$ ,  $-24/15$

**Solution:**

**(i)**  $-7/21$ ,  $3/9$

Let us simplify, we get

$$(-7/21) = (3/9)$$

$$(-1/3) = (1/3)$$

$$(-1/3) \neq (1/3)$$

$\therefore -7/21, 3/9$  are not same rational numbers.

**(ii)**  $-16/20, 20/-25$

Let us simplify, we get

$$(-16/20) = (20/-25)$$

$$(-4/5) = (4/-5)$$

$$(-4/5) = (-4/5)$$

$\therefore -16/20, 20/-25$  are same rational numbers.

**(iii)**  $-3/5, -12/20$

Let us simplify, we get

$$(-3/5) = (-12/20)$$

$$(-3/5) = (-3/5)$$

$\therefore -3/5, -12/20$  are same rational numbers.

**(iv)**  $8/-5, -24/15$

Let us simplify, we get

$$8/-5, -24/15$$

$$(8/-5) = (-24/15)$$

$$(8/-5) = (-8/5)$$

$$(-8/5) = (-8/5)$$

$\therefore 8/-5, -24/15$  are same rational numbers.

