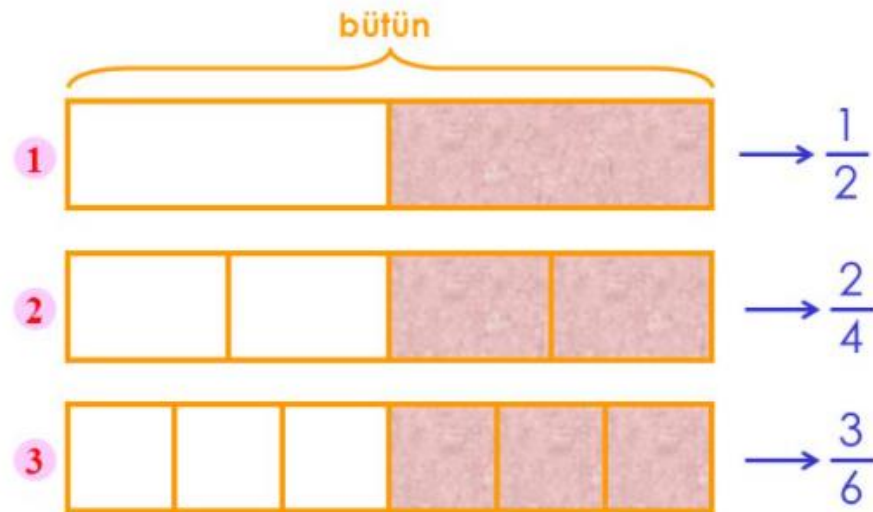
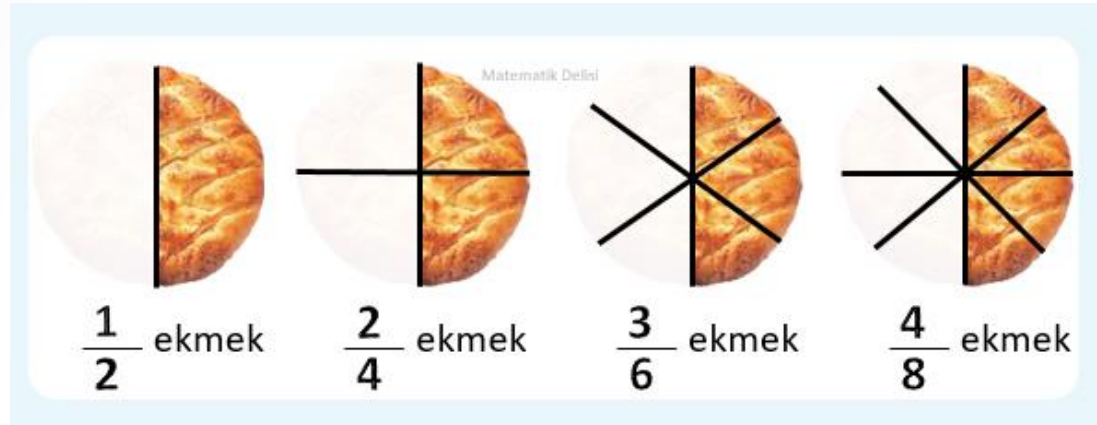


Matematik

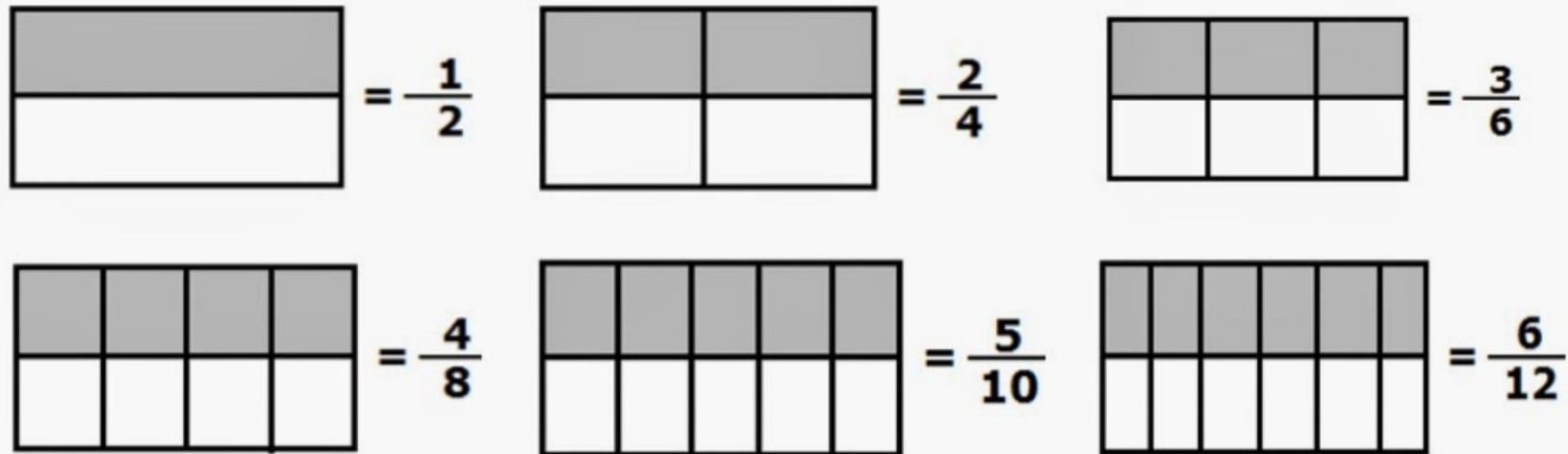
Öğretimi II

- 2. Konu
- Kesirlerde denklik,
- Kesirlerde karşılaştırma,
- Kesirlerde sıralama,
- Kesirlerle işlemler,

Kesirlerde denklik

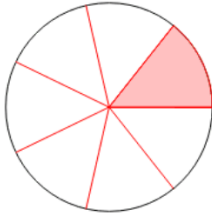


- Denk kesirlerin aynı model üzerinde eşit büyüklüğü ifade ettiği öğrenciler tarafından kavranmalıdır.

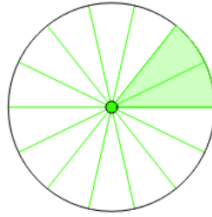


$$Yarım = \frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12} = \dots\dots$$

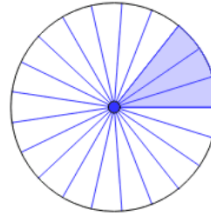
Kesirlerde genişletme, sadeleştirme



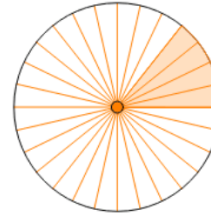
$$\frac{1}{7}$$



$$\frac{2}{14}$$



$$\frac{3}{21}$$



$$\frac{4}{28}$$

$$\frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}$$

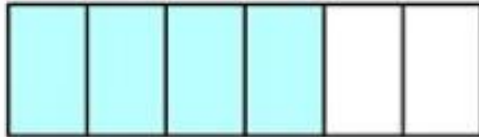
(4)

$$\frac{4}{12} = \frac{4 : 4}{12 : 4} = \frac{1}{3}$$

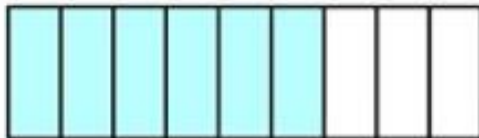
- Bu kesirler arasında nasıl bir ilişki olduğu öğrenciler tarafından belirlenir.
- «Bir kesrin pay ve paydası aynı sayı ile çarpılırsa veya bölünürse kesrin değeri değişmez, bu şekilde denk kesirler elde edilir»



$$\frac{2}{3} = \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$$

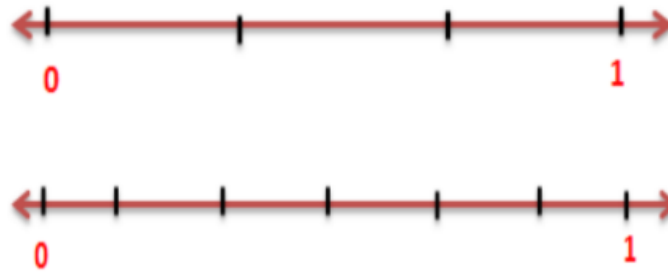


$$\frac{2}{3}$$



$$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$$

- Denk kesirlerin sayı doğrusu üzerinde gösterilmesi kavramın soyutlanması ve pekiştirilmesi bakımından önemlidir.



Kesirlerde karşılaştırma

- Birim kesirden faydalanılarak kesirler karşılaştırılır.



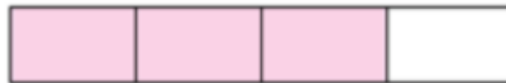
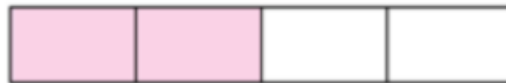
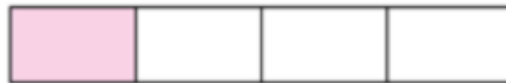
$$\frac{3}{6}$$



$$\frac{1}{6}$$



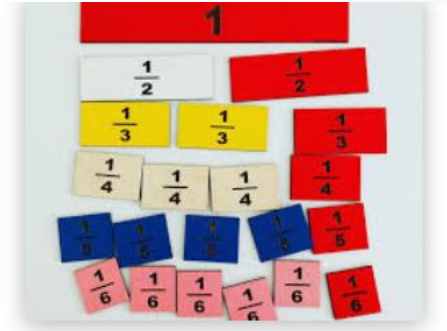
$$\frac{2}{6}$$



- Kavramsal öğrenme=kesir modelleri

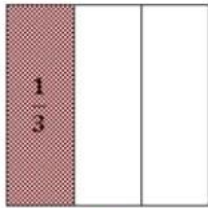


Kesir takımları

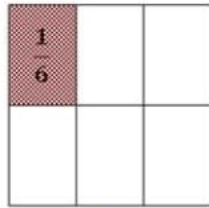


Kesirlerde sıralama

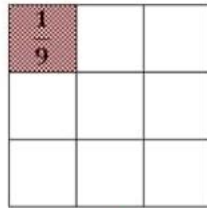
- Birim kesirlerde sıralama:
- «Paydası büyüdükçe kesir küçülür.»



$\frac{1}{3}$



$\frac{1}{6}$



$\frac{1}{9}$



—



—

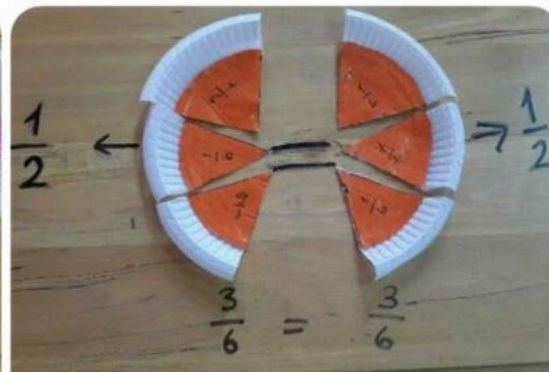
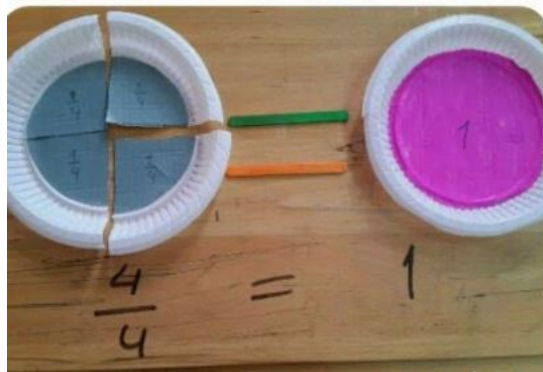
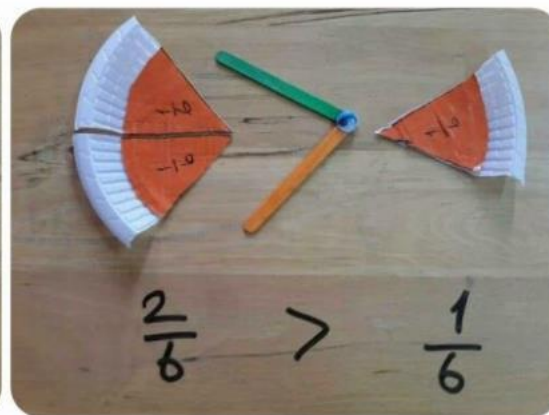
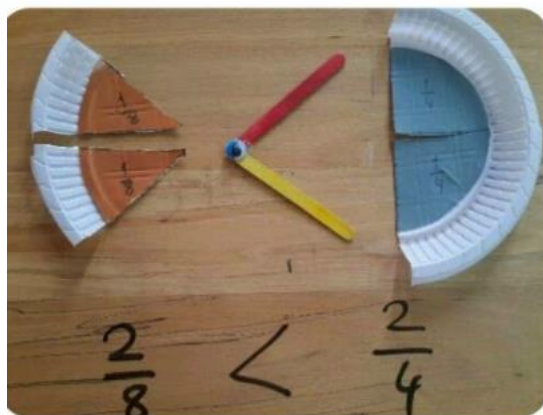


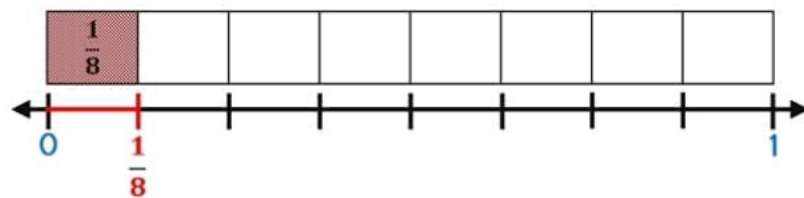
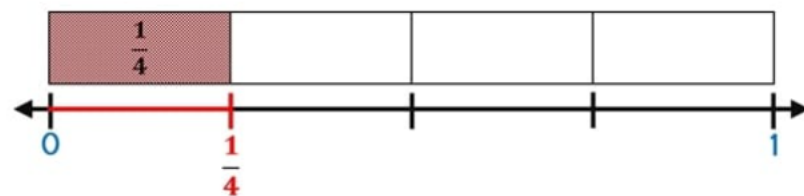
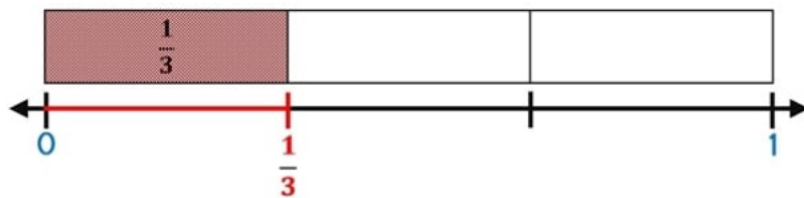
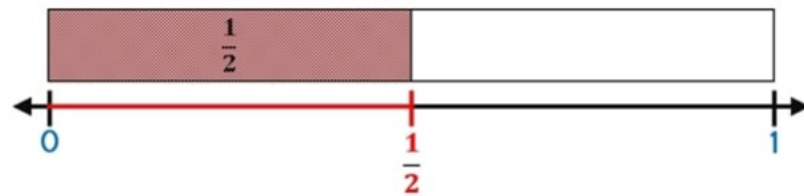
—



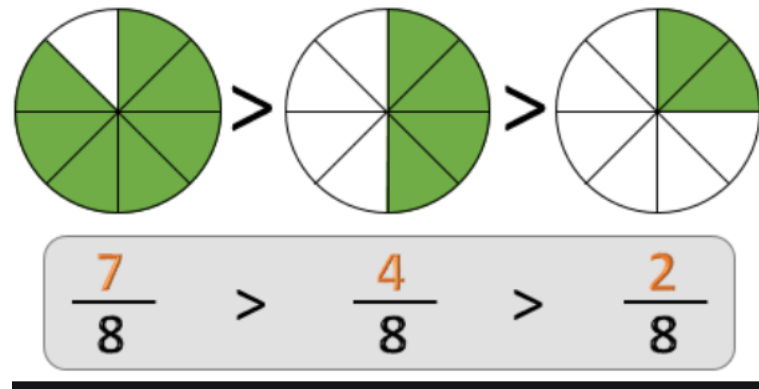
—







- Paydası aynı, payı farklı kesirleri sıralama



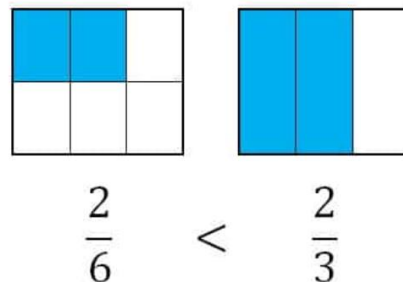
$$\frac{1}{4} \dots \frac{3}{4}$$

$$\frac{3}{6} \dots \frac{1}{6}$$

$$\frac{5}{6} \dots \frac{2}{6}$$

$$\frac{9}{9} \dots \frac{8}{9}$$

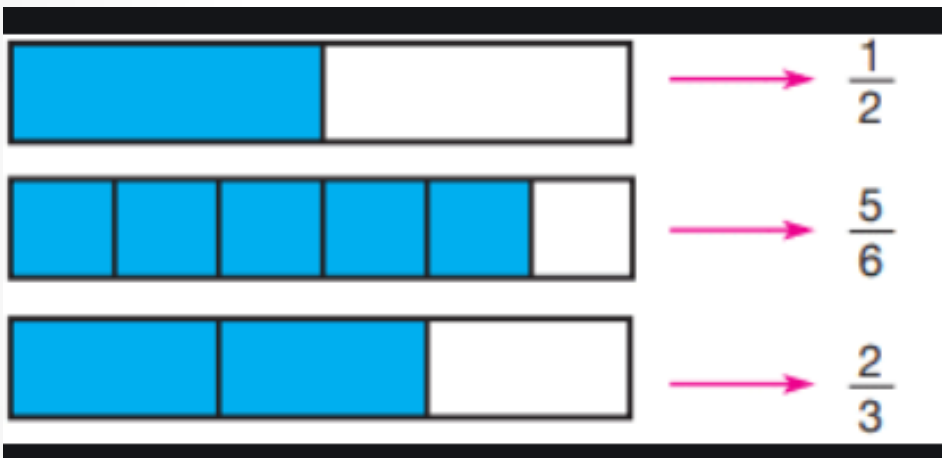
- Payı aynı, paydası farklı kesirleri sıralama



$$\frac{4}{6}, \frac{4}{7}, \frac{4}{5}, \frac{4}{9}$$

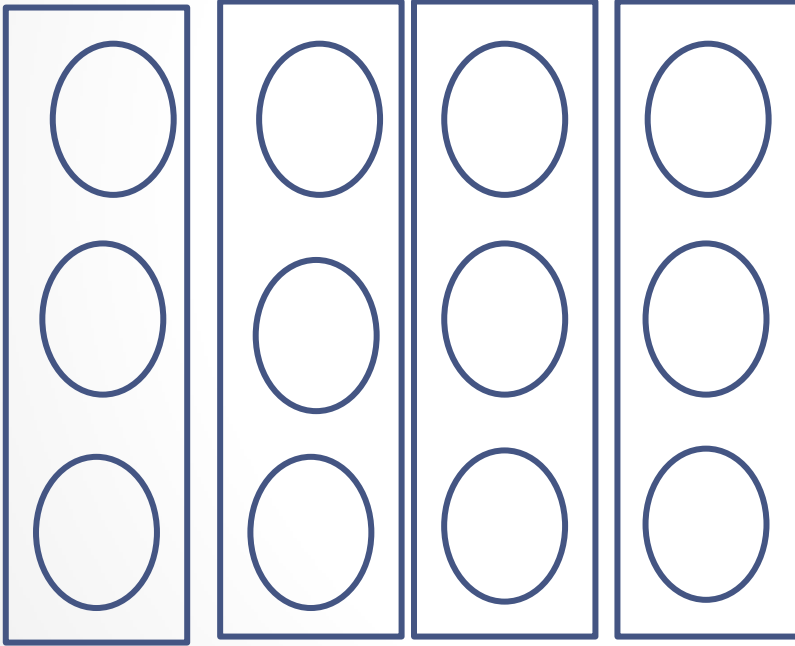
$$\frac{4}{5} > \frac{4}{6} > \frac{4}{7} > \frac{4}{9}$$

- Payı ve paydası farklı kesirleri sıralama



Bir sayının kesrini bulma

- 12 balonun $\frac{3}{4}$ ü sarı, kalanı mavidir. Bu göre mavi balon kaç tanedir?



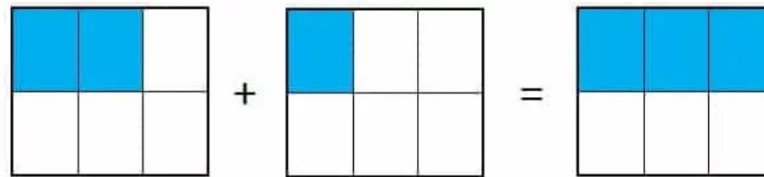
Kesirlerle işlemler

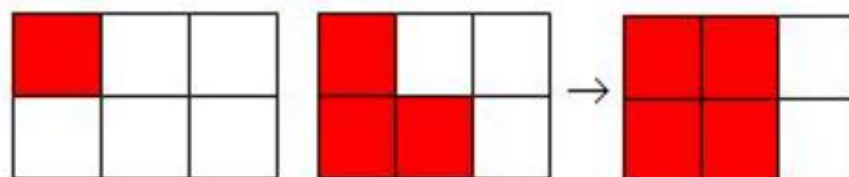
- Kesirlerde toplama
 - Kesirlerde çıkarma
 - Kesirlerde çarpma
 - Kesirlerde bölme
-
- Öğrencilerin kesirlerde işlemleri derinlemesine bir kavramsal anlayışla öğrenmeleri gerekir. Aksi halde kuralları ezberleyerek öğrenirler ve sürekli unuturlar. Bu nedenle farklı modellerle ve günlük yaşamla ilişkilendirilerek öğretilmesi gerekir.

(Van de Walle ve diğ. 2014)

Kesirlerde toplama

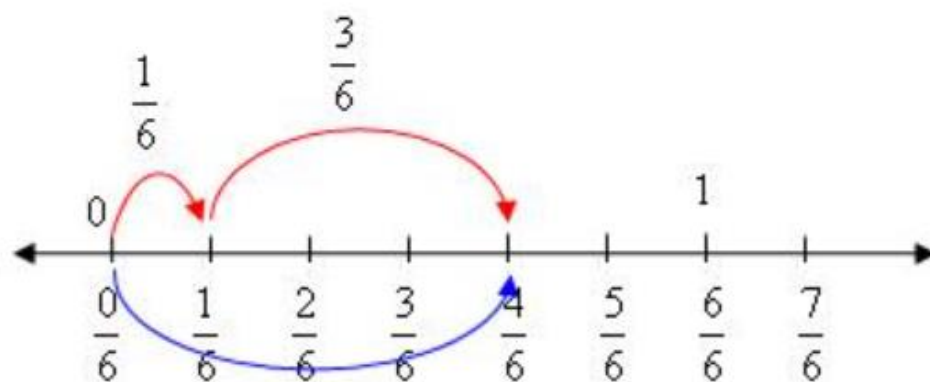
- Önce kural verilip sonra örnek çözümüne geçilmemelidir. Anlamalı öğrenme gerçekleştirilmezse öğrencilerde bilgi eksikliği ve kavram yanılgısı oluşur (Pesen, 2006).
- Örnekler günlük hayatla ilişkili, şekille çözülebilecek problemlerden seçilmeli ve çözümde geometrik şekillerden faydalanılmalıdır (Altun, 2014).


$$\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$$

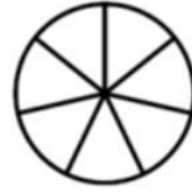


$$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$$

$$\frac{1}{6} + \frac{3}{6} = \frac{1+3}{6} = \frac{4}{6}$$



$$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$$



$$\frac{1}{7} + \frac{2}{7} = \underline{\hspace{2cm}}$$



+

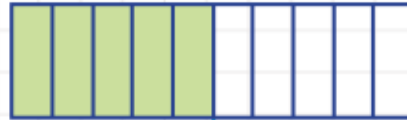
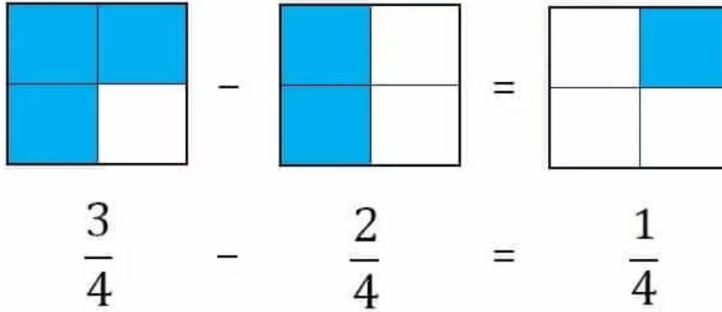


=

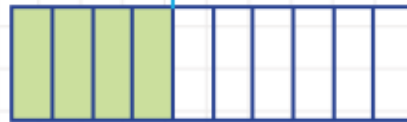


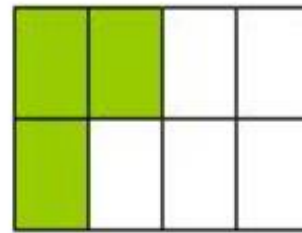
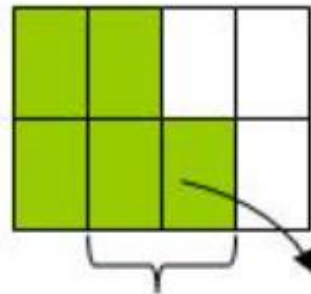
$$\frac{3}{6} + \frac{3}{6} = \frac{\dots}{\dots}$$

Kesirlerde çıkarma



$$\frac{5}{9} - \frac{1}{9} = \frac{4}{9}$$

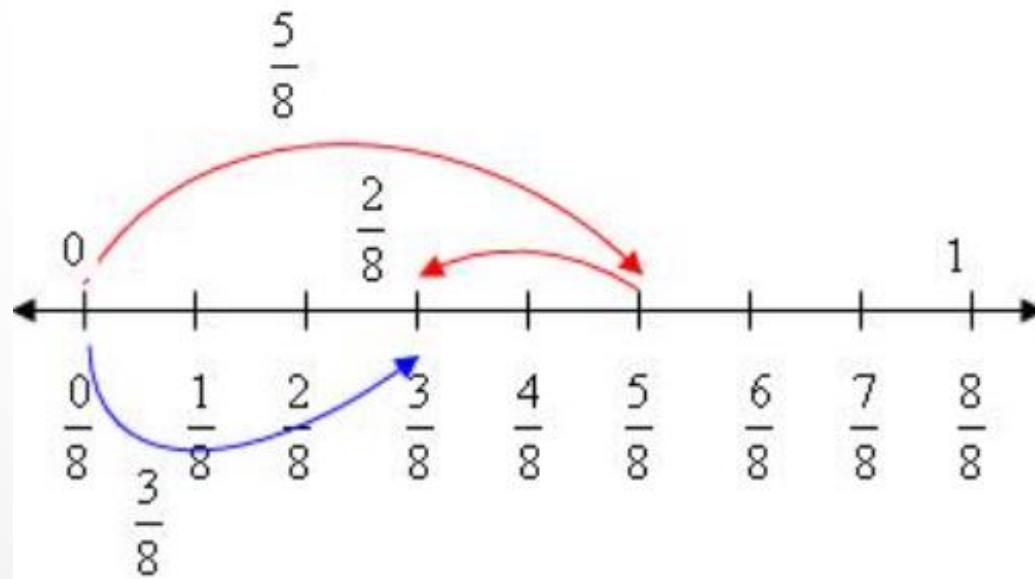


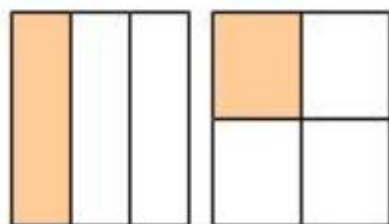


$$\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$$

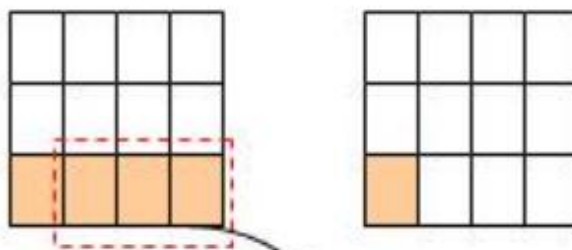
Eksilen Çıkan

Fark(kalan)

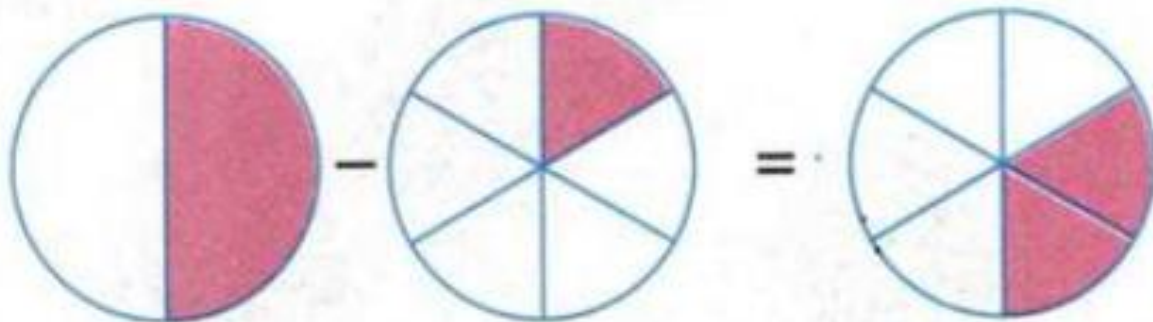




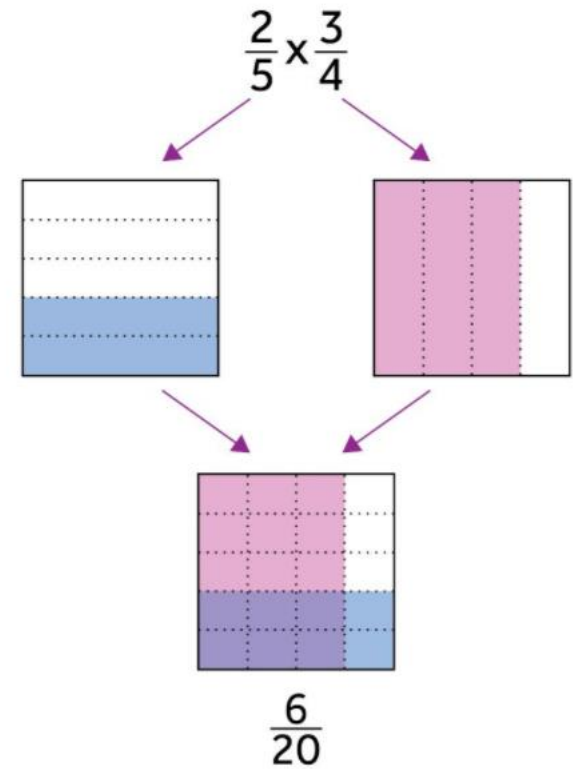
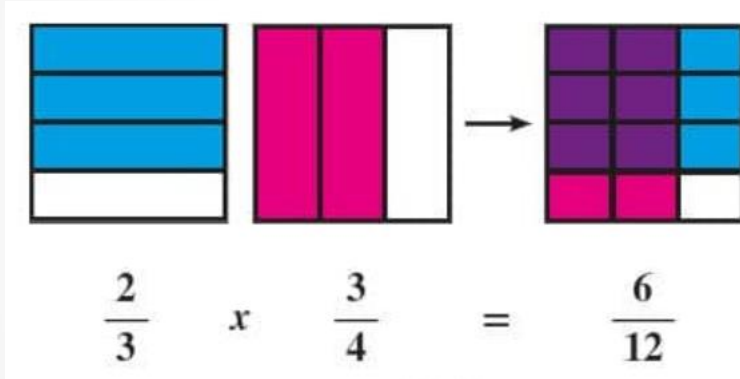
$$\frac{1}{3} - \frac{1}{4}$$



$$\frac{4}{12} - \frac{3}{12} = \frac{1}{12}$$



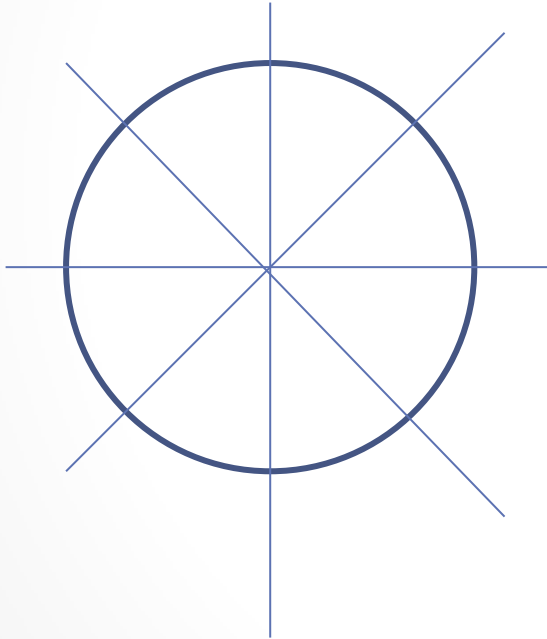
Kesirlerde çarpma



- Bir top kumaşın $\frac{2}{3}$ 'ünün $\frac{3}{4}$ 'ü satılmıştır. Tüm kumaşın kaçta kaçı satılmıştır?

Kesirlerde bölme

- Yarım pastayı dört kişiye paylaşırsak her birine ne kadar pasta düşer?



$$\frac{1}{2} \div 4 = ?$$

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$