

LEMBAR AKTIVITAS SISWA

Materi : Sifat-Sifat Eksponen

Tujuan Pembelajaran yang diharapkan tercapai:

1. Menemukan sifat-sifat eksponen
2. Menggunakan sifat-sifat eksponen dalam menentukan penyelesaian masalah

Lakukan aktivitas berikut secara runtut.

Persiapan

1. Berdoalah sebelum memulai kegiatan.
2. Siapkan buku catatan, alat tulis dan alat hitung.

Nama Kelompok :

1.
2.
3.
4.
5.

Sifat Eksponen 1



$$\begin{aligned} \text{a. } 2^2 \times 2^3 &= (2 \times 2) \times (2 \times 2 \times 2) \\ &\quad \begin{array}{cc} \underbrace{\hspace{1cm}} & \underbrace{\hspace{1cm}} \\ \text{2 faktor} & \text{3 faktor} \end{array} \\ &= 2 \times 2 \times 2 \times 2 \times 2 \\ &\quad \underbrace{\hspace{2cm}} \\ &\quad \text{5 faktor} \end{aligned}$$

$$= 2^5 = 2^{2+3}$$

$$\text{b. } 3^3 \times 3^4 = (\underbrace{3 \times 3 \times 3}_{3 \text{ faktor}}) \times (\underbrace{3 \times 3 \times 3 \times 3}_{4 \text{ faktor}})$$

$$= \underbrace{3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3}_{\dots\dots\dots \text{faktor}}$$

$$= \dots\dots\dots = \dots\dots\dots + \dots\dots\dots$$

$$\text{c. } 5^3 \times 5^2 = (\underbrace{\dots \times \dots \times \dots}_{\dots\dots\dots \text{faktor}}) \times (\underbrace{\dots \times \dots}_{\dots\dots\dots \text{faktor}})$$

$$= \underbrace{\dots \times \dots \times \dots \times \dots \times \dots \times \dots}_{\dots\dots\dots \text{faktor}}$$

$$= \dots\dots\dots = \dots\dots\dots + \dots\dots\dots$$

$$\text{d. } a^3 \times a^4 = (\underbrace{\dots \times \dots \times \dots}_{\dots\dots\dots \text{faktor}}) \times (\underbrace{\dots \times \dots \times \dots \times \dots}_{\dots\dots\dots \text{faktor}})$$

$$= \underbrace{\dots \times \dots \times \dots \times \dots \times \dots \times \dots \times \dots \times \dots}_{\dots\dots\dots \text{faktor}}$$

$$= \dots\dots\dots = \dots\dots\dots + \dots\dots\dots$$

$$\text{e. } a^m \times a^n = (\underbrace{a \times a \times a \times a \times a \times \dots \times a}_{m \text{ faktor}}) \times (\underbrace{a \times a \times a \times a \times a \times \dots \times a}_{n \text{ faktor}})$$

$$= \underbrace{a \times a \times a \times a \times a \times \dots \times a \times a \times a \times a \times a \times \dots \times a}_{m+n \text{ faktor}}$$

$$= \dots\dots\dots = \dots\dots\dots + \dots\dots\dots$$

Sifat Eksponen 2



$$\begin{aligned} \text{a. } \frac{2^5}{2^3} &= \frac{\overbrace{(2 \times 2 \times 2 \times 2 \times 2)}^{5 \text{ faktor}}}{\underbrace{(2 \times 2 \times 2)}_{3 \text{ faktor}}} \\ &= \frac{\cancel{2 \times 2 \times 2} \times 2 \times 2}{\cancel{2 \times 2 \times 2}} \\ &= 2^2 = 2^{5-3} \end{aligned}$$

$$\begin{aligned} \text{b. } \frac{3^6}{3^2} &= \frac{\overbrace{(3 \times 3 \times 3 \times 3 \times 3 \times 3)}^{6 \text{ faktor}}}{\underbrace{(3 \times 3)}_{2 \text{ faktor}}} \\ &= \frac{\cancel{3 \times 3} \times 3 \times 3 \times 3 \times 3}{\cancel{3 \times 3}} \\ &= 3^4 = 3^{6-2} \end{aligned}$$

$$\begin{aligned} \text{c. } \frac{5^3}{5^2} &= \frac{(\dots \times \dots \times \dots)}{(\dots \times \dots)} \\ &= \frac{\dots \times \dots \times \dots}{\dots \times \dots} \\ &= \dots = \dots - \dots \end{aligned}$$

$$\begin{aligned} \text{d. } \frac{a^4}{a^3} &= \frac{(\dots \times \dots \times \dots \times \dots)}{(\dots \times \dots \times \dots)} \\ &= \frac{\dots \times \dots \times \dots \times \dots}{\dots \times \dots \times \dots} \\ &= \dots = \dots - \dots \end{aligned}$$

$$\begin{aligned} \text{e. } \frac{a^m}{a^n} &= \frac{\overbrace{(a \times a \times a \times a \times a \times \dots \times a)}^{m \text{ faktor}}}{\underbrace{(a \times a \times a \times a \times a \times \dots \times a)}_{n \text{ faktor}}} \\ &= a^{\dots - \dots} \end{aligned}$$

Sifat eksponensial 3

$$\begin{aligned} \text{a. } (2^3)^2 &= 2^3 \times 2^3 \\ &= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \\ &= 2^6 = 2^{3 \times 2} \end{aligned}$$

$$\begin{aligned} \text{b. } (3^2)^3 &= 2 \times 2 \times 2 \\ &= (\dots \times \dots) \times (\dots \times \dots) \times (\dots \times \dots) \\ &= 6 = 2 \times 3 \end{aligned}$$

$$\begin{aligned} \text{c. } (a^3)^4 &= \times \times \times \\ &= (\dots \times \dots \times \dots) \times (\dots \times \dots \times \dots) \times (\dots \times \dots \times \dots) \times (\dots \times \dots \times \dots) \\ &= \dots \times \dots \end{aligned}$$

$$\begin{aligned} \text{d. } (a^m)^n &= \underbrace{\times \times \times \times \dots \times \dots \times \dots \times}_{\boxed{\text{n faktor}}} \\ &= \dots \times \dots \end{aligned}$$

Sifat Eksponen 4

$$\begin{aligned} \text{a. } (2 \times 3)^2 &= (2 \times 3) \times (2 \times 3) \\ &= 2 \times 3 \times 2 \times 3 \\ &= 2 \times 2 \times 3 \times 3 \\ &= 2^2 \times 3^2 \end{aligned}$$

$$\begin{aligned} \text{b. } (5 \times 7)^3 &= (5 \times 7) \times (5 \times 7) \times (5 \times 7) \\ &= 5 \times 7 \times 5 \times 7 \times 5 \times 7 \\ &= \dots \times \dots \times 5 \times \dots \times \dots \times 7 \\ &= \times \end{aligned}$$

$$\begin{aligned} \text{c. } (a \times b)^3 &= (\dots \times \dots) \times (\dots \times \dots) \times (\dots \times \dots) \\ &= \dots \times \dots \times \dots \times \dots \times \dots \times \dots \\ &= \dots \times \dots \times \dots \times \dots \times \dots \times \dots \\ &= \times \end{aligned}$$

$$\begin{aligned} \text{d. } (a \times b)^m &= (\dots \times \dots) \times (\dots \times \dots) \times (\dots \times \dots) \times \dots \times \dots \times (\dots \times \dots) \\ &= \times \end{aligned}$$

Sebanyak m faktor

Sifat Eksponensial 5

$$\begin{aligned} \text{a. } \left(\frac{3}{2}\right)^2 &= \left(\frac{3}{2}\right) \times \left(\frac{3}{2}\right) \\ &= \frac{3 \times 3}{2 \times 2} \\ &= \frac{3^2}{2^2} \end{aligned}$$

$$\begin{aligned} \text{b. } \left(\frac{2}{5}\right)^3 &= (-) \times (-) \times (-) \\ &= \frac{\dots \times \dots \times \dots}{\dots \times \dots \times \dots} \\ &= \text{---} \end{aligned}$$

$$\text{d. } \left(\frac{a}{b}\right)^m = (-) \times (-) \times (-) \times \dots \times (-)$$

Sebanyak m faktor

$$= \text{---}$$

$$\begin{aligned} \text{c. } \left(\frac{a}{b}\right)^3 &= \left(\frac{\boxed{a}}{\boxed{b}}\right) \times \left(\frac{\boxed{a}}{\boxed{b}}\right) \times \left(\frac{\boxed{a}}{\boxed{b}}\right) \\ &= \frac{\dots \times \dots \times \dots}{\dots \times \dots \times \dots} \\ &= \frac{\boxed{a}^3}{\boxed{b}^3} \end{aligned}$$

LATIHAN

Dengan menerapkan sifat-sifat bilangan eksponen, Sederhanakanlah soal di bawah ini

$$\begin{aligned} \left(\frac{2a^2b^{-1}c}{4ab^4c^{-2}}\right)^2 &= \frac{2 \dots \times \dots a \dots \times \dots b \dots \times \dots c \dots \times \dots}{4 \dots \times \dots a \dots \times \dots b \dots \times \dots c \dots \times \dots} \\ &= \frac{2}{4} \frac{a}{a} \frac{b}{b} \frac{c}{c} \\ &= \frac{4a^{4-2}c^{2+4}}{16b^{8+2}} \\ &= \frac{a}{4b} \frac{c}{c} \end{aligned}$$