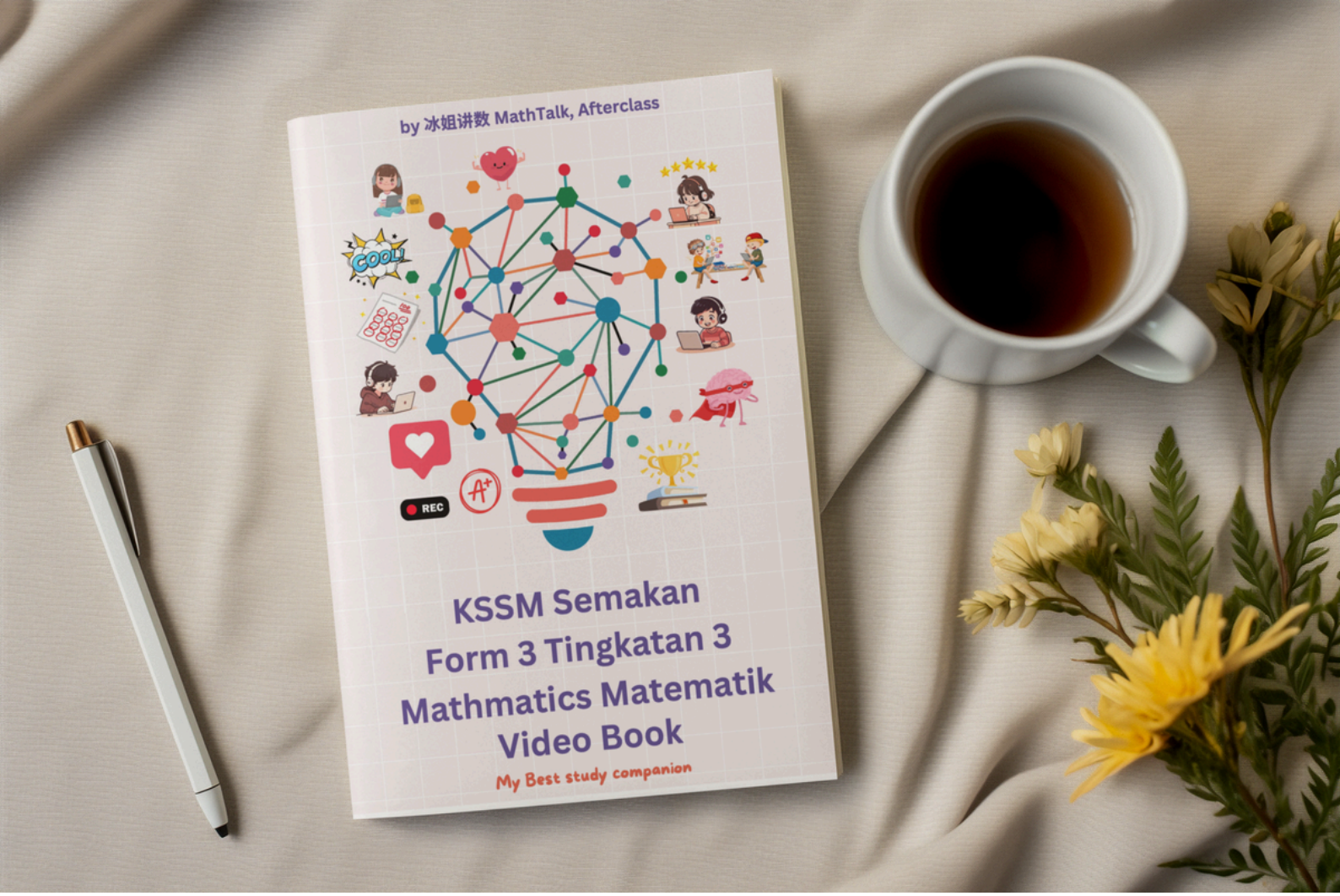
by 冰姐讲数 MathTalk, Afterclass

KSSM Semakan Form 3 Tingkatan 3 Mathmatics Matematik Video Book Free Trial

My Best study companion



您接下来所看见的所有内容都附带讲解视频， 学生完完全全可以依据自己的进度学习。这不是活动本也不是作业。是AddMath最完整课程，等于一本有电影的课本。

每个单元概念的讲解，

每题习题的讲解分析，

及历届考题的分析。

MathTalk 课程特点

❗ 课程内容依据KSSR Semakan 最新课程编写。

KSSM Semakan Mathematics Form 3 Full Course

by 冰姐讲数 MathTalk
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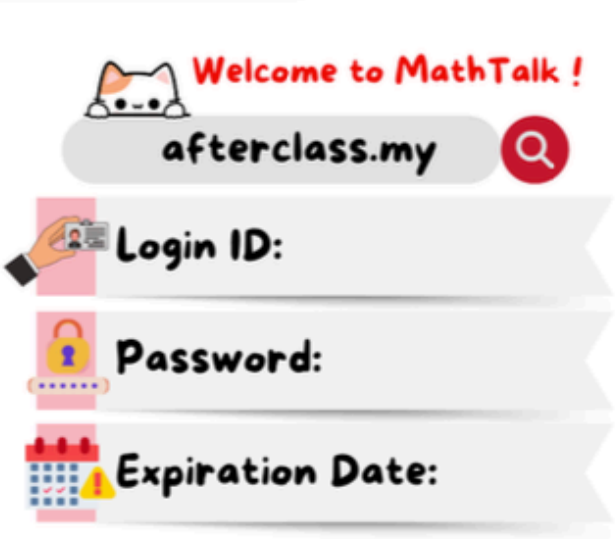
Content *Kandungan* 目录



Concept 1

Multiplication *Pendaraban*	Division *Pembahagian*
$a^m \times a^n = a^{m+n}$	$a^m \div a^n = a^{m-n}$
$2^5 \times 2^3 = 2^8$	$2^5 \div 2^3 = 2^2$

Power *Kuasa*	
$(a^m)^n = a^{mn}$	$(a^m \times a^n)^p = a^{mp} \times a^{np}$
$(2^3)^4 = 2^{12}$	$(2a^4)^3 = 8a^{12}$

Fractional index *Indeks pecahan*		
$a^{\frac{1}{n}} = \sqrt[n]{a}$	$a^{\frac{m}{n}} = (a^m)^{\frac{1}{n}}$	$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$
$8^{\frac{1}{3}} = \sqrt[3]{8} = 2$	$8^{\frac{2}{3}} = (8^2)^{\frac{1}{3}} = \left(8^{\frac{1}{3}}\right)^2 = 4$	$8^{\frac{2}{3}} = \sqrt[3]{8^2} = (\sqrt[3]{8})^2 = 4$

Negative index *Indeks negatif*	Zero index *Indeks Sifara*	
$a^{-n} = \frac{1}{a^n}; a \neq 0$	$a^0 = 1; a \neq 0$	
$7^{-2} = \frac{1}{7^2}$	$3^0 = 1$	$m^0 = 1$

Note 1

Only in MathTalk BASIC

1. When a number, a is multiplied by itself n times, the number can be written as a^n. *Apabila suatu nombor, a, didarab dengan dirinya sendiri sebanyak n kali, nombor itu boleh ditulis dalam bentuk* a^n.

2. Indices are also known as powers or exponents. *Indeks juga dikenali sebagai kuasa atau eksponen.*

Note 2 Concept of Cube root *Konsep Punca Kuasa Tiga*

Only in MathTalk IMPORTANT

a	b	c	d
$125^{\frac{1}{3}}$ or $\sqrt[3]{125}$	$125^{\frac{2}{3}}$ or $\sqrt[3]{125^2}$	$125^{\frac{3}{3}}$ or $\sqrt[3]{125^3}$	$125^{\frac{1}{2}}$ or $\sqrt{125}$

❗图解的方式帮助同学快速彻底明白概念。

Note 3

Only in MathTalk IMPORTANT

$\sqrt[8]{256}$	$\sqrt[8]{256^2}$	$\sqrt[8]{256^3}$	$\sqrt[8]{256^4}$	$\sqrt[8]{256^5}$	$\sqrt[8]{256^6}$	$\sqrt[8]{256^7}$	$\sqrt[8]{256^8}$
$256^{\frac{1}{8}}$	$256^{\frac{2}{8}}$	$256^{\frac{3}{8}}$	$256^{\frac{4}{8}}$	$256^{\frac{5}{8}}$	$256^{\frac{6}{8}}$	$256^{\frac{7}{8}}$	$256^{\frac{8}{8}}$
	$256^{\frac{1}{4}}$		$256^{\frac{1}{2}}$		$256^{\frac{3}{4}}$		256

Try me 1

REMEMBER!

Indices *Indeks*	
$2^0 =$	
$2^1 =$	
$2^2 =$	
$2^3 =$	
$2^4 =$	
$2^5 =$	
$2^6 =$	
$2^7 =$	
$2^8 =$	
$2^9 =$	
$2^{10} =$	

Indices *Indeks*	
$3^0 =$	
$3^1 =$	
$3^2 =$	
$3^3 =$	
$3^4 =$	
$3^5 =$	
$4^0 =$	
$4^1 =$	
$4^2 =$	
$4^3 =$	
$4^4 =$	

Indices *Indeks*	
$5^0 =$	
$5^1 =$	
$5^2 =$	
$5^3 =$	
$5^4 =$	
$6^0 =$	
$6^1 =$	
$6^2 =$	
$6^3 =$	
$7^0 =$	
$7^1 =$	

Skill 5

Case 1 *Kes 1*	Case 2 *Kes 2*
It is given that M varies directly as the square of N and inversely as P. If M=4.8 when N=6 and P=1.5, calculate *Diberi M berubah secara lansung dengan kuasa dua N dan secara songsang dengan P. Jika M =4.8 apabila N=6 dan P=1.5, hitung* a. The value of P when M=0.8 and N=2.4. *Nilai P apabila M=0.8 dan N=2.4.* b. The value of N when M=19 and P=3.8. *Nilai N apabila M=19 dan P=3.8.*	The table shows the changes in three quantities T, e and f. It is given that T varies inversely as the square root of e and the cube of f. Calculate the values of a and b. *Jadual menunjukkan perubahan tiga kuantiti, T, e dan f. Diberi T berubah secara songsang dengan punca kuasa dua e dan kuasa tiga f. Hitung nilai a dan nilai b.* T: 5, a, 0.256 e: 1.44, 36, b f: 2, 0.4, 5

❗由浅到深一题一题讲解。

Tutorial 1

1. Which of the following shows the relation of y varies directly as x?
Antara berikut, yang manakah menunjukkan hubungan y berubah secara langsung dengan x?
A $x + 5 = y$ B $y - 3 = x$
C $xy = -5$ D $6 = \frac{x}{y}$

2. The volume of a hemisphere, V cm^3, varies directly as the cube of its radius, r. By taking k as a constant of the variation, express k in terms of V and r.
Isipadu sebuah semisfera, V cm^3, berubah secara langsung dengan kuasa tiga jejarinya, r. Dengan menggunakan k sebagai pemalar bagi ubahan itu, ungkapkan k dalam sebutan V dan r.
A $k = Vr$ B $k = V\sqrt[3]{r}$
C $k = \frac{V}{r^3}$ D $k = \frac{V}{\sqrt[3]{r}}$

3. It is given that m varies directly as n and m=45 when n = 9. Express m in terms of n.
Diberi bahawa m berubah secara langsung dengan n dan m = 45 apabila n = 9. Ungkapkan m dalam sebutan n.
A $m = 5n$ B $m = \frac{1}{5}n$
C $m = 15n$ D $m = \frac{1}{15}n$

Did you know 1 [No explanation video provided in this part]

The symbol ∝ was introduced by William Emerson (1701-1782), an English mathematician, in 1768 in his book, The Doctrine of Fluxions.

Simbol ∝ diperkenalkan oleh William Emerson (1701-1782), seorang ahli matematik Inggeris, pada tahun 1768 dalam bukunya, The Doctrine of Fluxions.

Skill 1 Easy Confused

❗ 教你任何细节。

Bonus 1 IMPORTANT Only in MathTalk

It is given y varies directly as x. If y=0.14 when x=0.2, calculate *Diberi bahawa y berubah secara langsung dengan x. Jika y=0.14 apabila x=0.2, hitung,*

a. y when x = 5, *y apabila x=5*

b. x when y = 0.875, *x apabila y=0.875*

BingJie's message

When y varies directly as *x*, the value of $\frac{y}{x} = k$, where k is called the constant of proportionality. *Apabila y berubah secara langsung dengan x, nilai* $\frac{y}{x} = k$, *dengan keadaan k dikenali sebagai pemalar perkadaran.*

$E=mc^2$ Formula [No explanation video provided in this part]

y varies inversely as x, *y berubah secara songsang dengan x.*	$\frac{1}{x}$
y varies inversely as the square of x, *y berubah secara songsang dengan kuasa dua x.*	$\frac{1}{x^2}$
y varies inversely as the cube of x, *y berubah secara songsang dengan kuasa tiga x.*	$\frac{1}{x^3}$
y varies inversely as the square root of x, *y berubah secara songsang dengan punca kuasa dua x.*	$\frac{1}{\sqrt{x}}$
y varies inversely as the cube root of x. *y berubah secara songsang dengan punca kuasa tiga x.*	$\frac{1}{\sqrt[3]{x}}$

EXAMPLE Example 2 KSSM Semakan School Text Book

1. It is given that x=0.25 when y=3. Express y in terms of x if
   Diberi x=0.25 apabila y=3. Ungkapkan y dalam sebutan x jika
   a. y varies inversely as x, *y berubah secara songsang dengan x.* [Ans: $y = \frac{3}{4x}$]
   b. y varies inversely as the square root of x. *y berubah secara songsang dengan punca kuasa dua x.* [Ans: $\frac{3}{2\sqrt{x}}$]

2. The force of gravity, F, varies inversely as the square of the distance between two objects, d. It is given that the force of gravity between two objects is 15N when the distance between them is 1.2cm. Write an expression of F in terms of d. *Tarikan gravity, F, berubah secara songsang dengan kuasa dua jarak di antara dua buah objek, d. Diberi tarikan gravity di antara dua buah objek ialah 15N apabila jarak di antaranya ialah 1.2cm. Tuliskan satu ungkapan F dalam sebutan d.* [Ans: $F = \frac{21.6}{d^2}$]

3. It is given that p varies inversely as q. If p=2 when q=7, calculate the value of p when q=1.6. *Diberi p berubah secara songsang dengan q. Jika p =2 apabila q=7, hitung nilai p apabila q=1.6.* [Ans: 8.75]

Method 1 *Cara 1*	Method 2 *Cara 2*

Example1, Q1

❗一题多解，帮助学生彻底明白概念。

为什么MathTalk课程更适合大家?

事半功倍

每个家长都知道，现在学生的活动特别多，回到家通常都十分疲倦，还需要上补习班的话，大家觉得孩子可以吸收多少呢？MathTalk 课程的优点在于孩子可以足够休息后，在精神最佳的状态依据自己的进度学习，效果肯定大大提升。

适合成绩不理想的同学

对于基础不好，还是学习能力比较慢，需要时间慢慢理解的同学，大家认为补习班的老师是否会为了一名学生而拖慢整个进度吗？前面单元没学到的课程又如何呢？MathTalk 的课程是一个题目一个视频，学生哪里不会， 就学哪里， 学到会为止。不用紧张， 不用压力。

更适合成绩优越的同学

数学成绩比较优越的你，会比较希望在补习班中浪费时间听已经懂的题目，还是希望可以把握时间，尽量学习更多不同的题型，如果是后者，就只有MathTalk适合你。

10%的费用，10倍的效果

MathTalk 课程就等于和冰姐进行一对一的私人家教。课程不是平常上课补习班的录的视频，是冰姐特别一题一个讲解，完整却仔细的讲解每道题目和概念。但学费却只需不到补习费的十分之一。

每天进步1%

每天只需花几分钟的时间，学习数学课程。养成每天进步1%的好习惯，半年后你肯定被自己的改变吓一跳。

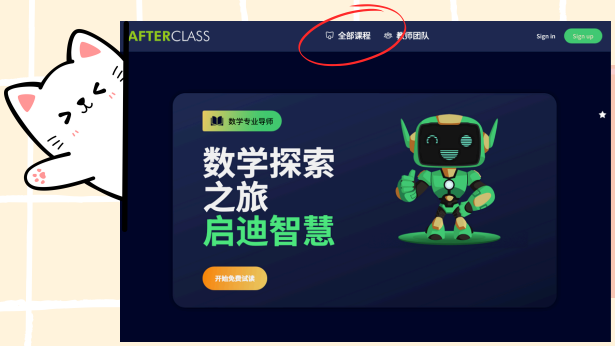
免费培训班

所有购买 MathTalk课程的同学都可免费获得全年不定期的现场直播培训班，或者以半价的优惠价出席特训班。同学可以和冰姐互动，同时冰姐也可以帮忙解决学生的问题。

如何登入 Afterclass 网站开始学习

请登入到MathTalk, Afterclass 网站

afterclass.my



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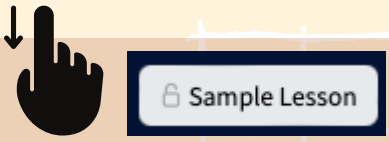

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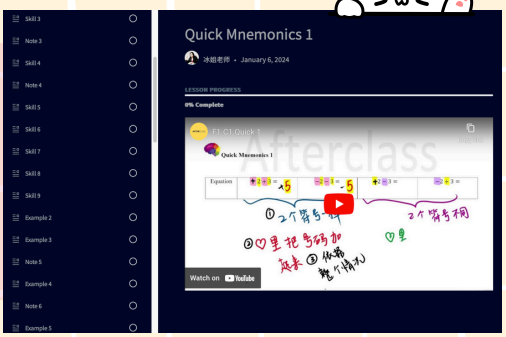

如何有效使用MathTalk 课程学习

步驟 1

每当开始学习新的单元，学生首选必须通过Concept 和 Note 对即将学习的概念有初步的了解。

步驟 2

通过观看视频先从 Example 开始学习基本的题目和作答方法。

步驟 3

明白基本概念后，在先不看视频的情况下自己尝试Exercise题目，此类题目是针对Example所教的方法进行训练。完成后，并下载 PDF 检查答案，答案错的话再观察视频讲解。

步驟 4

重复步骤3并完成每个 Exercise，Skill 和 Bonus 的讲解绝对不可以错过，因为这些都是非常有用的技巧。

步驟 5

当你完成所有的 Exercise，基本上就已经是把整个单元学完了。

步驟 6

最后步骤，也是最重要的，就是 Tutorial 题目，Tutorial 多数为历届考题，考试的题型。先自行尝试，如果答案再观看视频。所有Tutorial 必须完成。

前言

教导数学超过 20 年的经验告诉我，学习数学并不只是解答问题，更重要的是掌握概念，并理解其中的逻辑。正因如此，我编写了这套针对马来西亚中三学生的数学课程 (KSSM Semakan Form 3 Mathematics)，旨在帮助学生全面理解每一个数学概念，不仅为即将到来的考试做好准备，更为日后中四的学习奠定坚实的基础。

在每个单元的讲解， 我们都会先确保学生掌握单元的概念和学习方向， 并以引导式的方式循序渐近地一步一步掌握，课程内也融入了许多实用的作答技巧，并通过图像说明的方式，帮助学生更直观地掌握数学。通过这种教学方式，学生能够独立完成考试题目，建立自信。

让我们一起踏上这段数学学习之旅，探索其中的奥秘！

关于冰姐：

- 一个可以陪你聊心事的数学老师。
- 1口气亲自录制了18本视频书，目前仍在进行中。。。
- 曾经和你一样，数学也不及格，甚至可能比现在你的成绩更差，所以冰姐完全可以理解你的心情和学业上的需求。
- 5只毛孩的仆人，并承诺爱护他们一辈子。
- 以刚刚好过的分数毕业🎓于马来西亚理科大学荣誉学士 Bsc. (Hons) in Physics, USM。
- 你可以Jio她一起打Dota的数学老师。
- 曾经教过的学生包括: 幼儿园学生，小学生，中学生（马来学生、印度学生，华人学生），独中生，IGCSE 考生，奥数培训生，过动儿学生，学习障碍学生，因为错过求学年龄而再次捡起书本的成年人，大学学院生，国际学生包括： 迪拜学生，阿布扎比学生，老挝学生，中国学生，澳洲学生，马尔代夫学生等，接触的学生多了，教学经验自然就丰富了。
- 不要以为冰姐只是补习老师， 冰姐也是师训Diploma 🎓 CGPA 3.9 毕业生及前独中老师。
- 不用好奇为什么冰姐懂这么多特别多概念和教学技巧，冰姐的师父就是这么多年以来教过的学生，他们向冰姐发问问题，冰姐为了让学生真正明白而不断地思考再思考他们的问题，就好像武功练久了， 自然就有《独门秘籍》。因此，冰姐教的技巧绝对是独一无二， 也是最有效的。

江湖路上高手众多，冰姐的数学肯定不是最强的那个，但可以肯定告诉你，冰姐却是最热爱数学的那个，希望进步的路上有你！

Concept 1

Multiplication *Pendaraban*	Division *Pembahagian*
$a^m \times a^n = a^{m+n}$	$a^m \div a^n = a^{m-n}$
$2^5 \times 2^3 = 2^8$	$2^5 \div 2^3 = 2^2$

Power *Kuasa*	
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$a^{\frac{1}{n}} = \sqrt[n]{a}$	$a^{\frac{m}{n}} = (a^m)^{\frac{1}{n}}$	$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$
$8^{\frac{1}{3}} = \sqrt[3]{8} = 2$	$8^{\frac{2}{3}} = (8^2)^{\frac{1}{3}} = \left(8^{\frac{1}{3}}\right)^2 = 4$	$8^{\frac{2}{3}} = \sqrt[3]{8^2} = (\sqrt[3]{8})^2 = 4$

Negative index *Indeks negatif*	Zero index *Indeks Sifara*	
$a^{-n} = \frac{1}{a^n}; a \neq 0$	$a^0 = 1; a \neq 0$	
$7^{-2} = \frac{1}{7^2}$	$3^0 = 1$	$m^0 = 1$

Note 1 Only in MathTalk BASIC

1. When a number, a is multiplied by itself n times, the number can be written as a^n. *Apabila suatu nombor, a, didarab dengan dirinya sendiri sebanyak n kali, nombor itu boleh ditulis dalam bentuk* a^n.

2. Indices are also known as powers or exponents. *Indeks juga dikenali sebagai kuasa atau eksponen*.

Example 1 KSSM Semakan School Text Book

1. Write the following repeated multiplications in index form a^n. *Tulis pendaraban berulang berikut dalam bentuk indeks* a^n.
   a. $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$ [Ans: 6^9]
   b. $0.2 \times 0.2 \times 0.2 \times 0.2 \times 0.2$ [Ans: 0.2^5]
   c. $0.03 \times 0.03 \times 0.03 \times 0.03 \times 0.03 \times 0.03 \times 0.03 \times 0.03$ [Ans: 0.03^8]
   d. $(-2) \times (-2) \times (-2) \times (-2)$ [Ans: $(-2)^4$]
   e. $\frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5}$ [Ans: $\left(\frac{2}{5}\right)^6$]
   f. $k \times k \times k \times k \times k \times k \times k \times k \times k \times k$ [Ans: k^{10}]
   g. $(-n) \times (-n) \times (-n)$ [Ans:$(-n)^3$]

2. Write 64 in index form using base of 2, base of 4 and base of 8. *Tuliskan 64 dalam bentuk indeks dengan menggunakan asas 2, asas 4 dan asas 8.* [Ans: $64 = 2^6$, $64 = 4^3$, $64 = 8^2$]

Exercise 1 BASIC

1. Write each of the index notation below in the form of repeated multiplication. *Tulis setiap tatatanda indeks yang berikut dalam bentuk pendaraban berulang.*

a	b	c	d
$3^5 =$	$(-0.02)^3 =$	$\left(\frac{3}{4}\right)^4 =$	$(xyz)^2 =$

2. Find the value of the followings. *Carikan nilai bagi setiap berikut.*

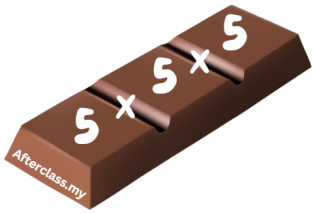
a	b	c	d
$3^5 =$	$(-0.02)^3 =$	$\left(\frac{3}{4}\right)^4 =$	$(100)^2 =$

3. Write the following single numbers in index notation. *Tuliskan setiap yang berikut dalam tatatanda indeks.*

a	b	c	d
81 (base 3)	32 (base 2)	121 (base 11)	$-\frac{4}{5}$ (base $-\frac{4}{5}$)

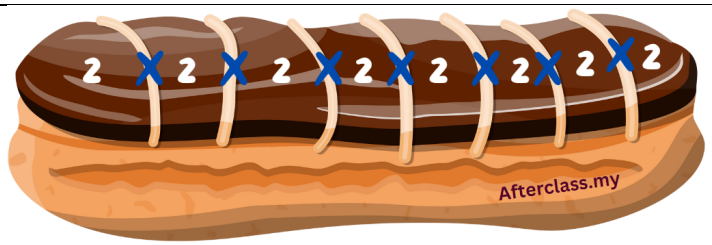
Note 2 Concept of Cube root *Konsep Punca Kuasa Tiga*

Only in MathTalk IMPORTANT

	a	b	c	d
	$125^{\frac{1}{3}}$ or $\sqrt[3]{125}$	$125^{\frac{2}{3}}$ or $\sqrt[3]{125^2}$	$125^{\frac{3}{3}}$ or $\sqrt[3]{125^3}$	$125^{\frac{1}{2}}$ or $\sqrt{125}$

Note 3

Only in MathTalk IMPORTANT



$\sqrt[8]{256}$	$\sqrt[8]{256^2}$	$\sqrt[8]{256^3}$	$\sqrt[8]{256^4}$	$\sqrt[8]{256^5}$	$\sqrt[8]{256^6}$	$\sqrt[8]{256^7}$	$\sqrt[8]{256^8}$
$256^{\frac{1}{8}}$	$256^{\frac{2}{8}}$	$256^{\frac{3}{8}}$	$256^{\frac{4}{8}}$	$256^{\frac{5}{8}}$	$256^{\frac{6}{8}}$	$256^{\frac{7}{8}}$	$256^{\frac{8}{8}}$
	$256^{\frac{1}{4}}$		$256^{\frac{1}{2}}$		$256^{\frac{3}{4}}$		256

Try me 1

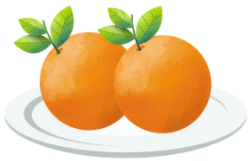
REMEMBER!

Indices *Indeks*	
$2^0 =$	
$2^1 =$	
$2^2 =$	
$2^3 =$	
$2^4 =$	
$2^5 =$	
$2^6 =$	
$2^7 =$	
$2^8 =$	
$2^9 =$	
$2^{10} =$	

Indices *Indeks*	
$3^0 =$	
$3^1 =$	
$3^2 =$	
$3^3 =$	
$3^4 =$	
$3^5 =$	
$4^0 =$	
$4^1 =$	
$4^2 =$	
$4^3 =$	
$4^4 =$	

Indices *Indeks*	
$5^0 =$	
$5^1 =$	
$5^2 =$	
$5^3 =$	
$5^4 =$	
$6^0 =$	
$6^1 =$	
$6^2 =$	
$6^3 =$	
$7^0 =$	
$7^1 =$	

BONUS Bonus 1 Only in MathTalk IMPORTANT Easy Confused

$\sqrt{2}+\sqrt{2}$	$\sqrt{2}\times\sqrt{2}$
	

MathTalk Calculator corner 1

Correct	Wrong
	
2 × 27 ^ (2 a b/c 3)	2 × 27 ^ 2 a b/c 3
$2\times 27^{\frac{2}{3}}=$	

EXAMPLE Example 2 KSSM Semakan School Text Book

1. Convert each of the following terms into the form $a^{\frac{1}{n}}$. *Tukarkan setiap berikut kepada bentuk* $a^{\frac{1}{n}}$.

   a. $\sqrt[2]{64}$ [Ans: $64^{\frac{1}{2}}$]

   b. $\sqrt[3]{-27}$ [Ans: $(-27)^{\frac{1}{3}}$]

   c. $\sqrt[5]{m}$ [Ans: $m^{\frac{1}{5}}$]

   d. $\sqrt[7]{n}$ [Ans: $n^{\frac{1}{7}}$]

2. Convert each of the following terms into the form $\sqrt[n]{a}$. *Tukarkan setiap berikut kepada bentuk* $\sqrt[n]{a}$.
   a. $125^{\frac{1}{3}}$ [Ans: $\sqrt[3]{125}$]
   b. $256^{\frac{1}{8}}$ [Ans: $\sqrt[8]{256}$]
   c. $(-1000)^{\frac{1}{3}}$ [Ans: $\sqrt[3]{-1000}$]
   d. $m^{\frac{1}{12}}$ [Ans: $\sqrt[12]{m}$]

3. Calculate the value of each of the following terms. *Hitungkan nilai bagi setiap berikut.*
   a. $\sqrt[5]{-32}$ [Ans: -2]
   b. $\sqrt[6]{729}$ [Ans: 3]
   c. $512^{\frac{1}{3}}$ [Ans: 8]
   d. $(-243)^{\frac{1}{5}}$ [Ans: -3]

EXAMPLE Example 3 KSSM Semakan School Text Book

1. Convert each of the following into the form $(a^m)^{\frac{1}{n}}$ and $\left(a^{\frac{1}{n}}\right)^m$. *Tukar setiap berikut kepada bentuk* $(a^m)^{\frac{1}{n}}$ *dan* $\left(a^{\frac{1}{n}}\right)^m$.
   a. $81^{\frac{3}{2}}$ [Ans: $(81^3)^{\frac{1}{2}}$ and $\left(81^{\frac{1}{2}}\right)^3$]
   b. $27^{\frac{2}{3}}$ [Ans: $(27^2)^{\frac{1}{3}}$ and $\left(27^{\frac{1}{3}}\right)^2$]
   c. $h^{\frac{3}{5}}$ [Ans: $(h^3)^{\frac{1}{5}}$ and $\left(h^{\frac{1}{5}}\right)^3$]

2. Convert each of the following into the form $\sqrt[n]{a^m}$ and $\left(\sqrt[n]{a}\right)^m$. *Tukarkan setiap berikut kepada bentuk* $\sqrt[n]{a^m}$ *dan* $\left(\sqrt[n]{a}\right)^m$.
   a. $343^{\frac{2}{3}}$ [Ans: $\sqrt[3]{343^2}$ and $\left(\sqrt[3]{343}\right)^2$]
   b. $4096^{\frac{5}{6}}$ [Ans: $\sqrt[6]{4096^5}$ and $\left(\sqrt[6]{4096}\right)^5$]
   c. $m^{\frac{2}{5}}$ [Ans: $\sqrt[5]{m^2}$ and $\left(\sqrt[5]{m}\right)^2$]

3. Calculate the value of each of the following. *Hitung nilai bagi setiap berikut.*
   a. $9^{\frac{5}{2}}$ [Ans: 243]
   b. $16^{\frac{5}{4}}$ [Ans: 32]

Exercise 2 Calculate the value of each of the following. *Hitung nilai bagi setiap berikut.*

	1	2
a	$32^{\frac{3}{5}}$	$512^{\frac{8}{9}}$
b	$64^{\frac{1}{2}}$	$216^{\frac{1}{3}}$
c	$10000^{\frac{3}{4}}$	$9^{\frac{1}{2}}$
d	$125^{\frac{2}{3}}$	$4^{\frac{1}{2}}$
e	$1024^{\frac{3}{10}}$	$8^{\frac{2}{3}}$
F	$49^{\frac{1}{2}}$	$27^{\frac{1}{3}}$
g	$243^{\frac{4}{5}}$	$256^{\frac{1}{4}}$

Skill 1 Calculate the value of each of the following. *Hitung nilai bagi setiap berikut.* Common Basic Needed

$32^{\frac{4}{5}}$	$32^{\frac{5}{5}}$	$32^{\frac{6}{5}}$

Skill 2 Calculate the value of each of the following. *Hitung nilai bagi setiap berikut.*

$64^{\frac{1}{2}}$	$64^{\frac{2}{4}}$	$64^{\frac{3}{6}}$

Skill 3 Calculate the value of each of the following. *Hitung nilai bagi setiap berikut.* Easy Confused

a	b
$3m^2$	$(3m)^2$

Skill 4 Easy Confused Only in MathTalk IMPORTANT

a	b	c
$(-3m)^2$	$-(3m)^2$	$-(-3m)^2$

d	e	f
$(-3m)^3$	$-(3m)^3$	$-(-3m)^3$

Skill 5 LEVEL UP! Level Up Multiple Steps Only in MathTalk

	2	3	4
a	$\sqrt{2}\times\sqrt{2}$	$\sqrt{2}\times\sqrt{2}\times\sqrt{2}$	$\sqrt{2}\times\sqrt{2}\times\sqrt{2}\times\sqrt{2}$
b	$\sqrt{3}\times\sqrt{3}$	$\sqrt{3}\times\sqrt{3}\times\sqrt{3}$	$\sqrt{3}\times\sqrt{3}\times\sqrt{3}\times\sqrt{3}$
c	$\sqrt{4}\times\sqrt{4}$	$\sqrt{4}\times\sqrt{4}\times\sqrt{4}$	$\sqrt{4}\times\sqrt{4}\times\sqrt{4}\times\sqrt{4}$
d	$\sqrt{5}\times\sqrt{5}$	$\sqrt{5}\times\sqrt{5}\times\sqrt{5}$	$\sqrt{5}\times\sqrt{5}\times\sqrt{5}\times\sqrt{5}$
e	$\sqrt{6}\times\sqrt{6}$	$\sqrt{6}\times\sqrt{6}\times\sqrt{6}$	$\sqrt{6}\times\sqrt{6}\times\sqrt{6}\times\sqrt{6}$
f	$\sqrt{7}\times\sqrt{7}$	$\sqrt{7}\times\sqrt{7}\times\sqrt{7}$	$\sqrt{7}\times\sqrt{7}\times\sqrt{7}\times\sqrt{7}$
g	$\sqrt{8}\times\sqrt{8}$	$\sqrt{8}\times\sqrt{8}\times\sqrt{8}$	$\sqrt{8}\times\sqrt{8}\times\sqrt{8}\times\sqrt{8}$

	5	6
a	$\sqrt{2}\times\sqrt{2}\times\sqrt{2}\times\sqrt{2}\times\sqrt{2}$	$\sqrt{2}\times\sqrt{2}\times\sqrt{2}\times\sqrt{2}\times\sqrt{2}\times\sqrt{2}$
b	$\sqrt{3}\times\sqrt{3}\times\sqrt{3}\times\sqrt{3}\times\sqrt{3}$	$\sqrt{3}\times\sqrt{3}\times\sqrt{3}\times\sqrt{3}\times\sqrt{3}\times\sqrt{3}$
c	$\sqrt{4}\times\sqrt{4}\times\sqrt{4}\times\sqrt{4}\times\sqrt{4}$	$\sqrt{4}\times\sqrt{4}\times\sqrt{4}\times\sqrt{4}\times\sqrt{4}\times\sqrt{4}$
d	$\sqrt{5}\times\sqrt{5}\times\sqrt{5}\times\sqrt{5}\times\sqrt{5}$	$\sqrt{5}\times\sqrt{5}\times\sqrt{5}\times\sqrt{5}\times\sqrt{5}\times\sqrt{5}$
e	$\sqrt{6}\times\sqrt{6}\times\sqrt{6}\times\sqrt{6}\times\sqrt{6}$	$\sqrt{6}\times\sqrt{6}\times\sqrt{6}\times\sqrt{6}\times\sqrt{6}\times\sqrt{6}$
f	$\sqrt{7}\times\sqrt{7}\times\sqrt{7}\times\sqrt{7}\times\sqrt{7}$	$\sqrt{7}\times\sqrt{7}\times\sqrt{7}\times\sqrt{7}\times\sqrt{7}\times\sqrt{7}$
g	$\sqrt{8}\times\sqrt{8}\times\sqrt{8}\times\sqrt{8}\times\sqrt{8}$	$\sqrt{8}\times\sqrt{8}\times\sqrt{8}\times\sqrt{8}\times\sqrt{8}\times\sqrt{8}$

Skill 6 LEVEL UP! Level Up

	3	4	5
a	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$
b	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$
c	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$
d	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$
e	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$
f	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$
g	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$

	6	7
a	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$
b	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$
c	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$
d	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$
e	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$
f	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$
g	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$

	8
a	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$
b	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$
c	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$
d	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$
e	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$
f	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$
g	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$

	9
a	$\sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2} \times \sqrt[3]{2}$
b	$\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$
c	$\sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4} \times \sqrt[3]{4}$
d	$\sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5} \times \sqrt[3]{5}$
e	$\sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6} \times \sqrt[3]{6}$
f	$\sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7} \times \sqrt[3]{7}$
g	$\sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8} \times \sqrt[3]{8}$

Example 4 KSSM Semakan School Text Book

1. Write $\frac{32}{3125}$ in index form using base of $\frac{2}{5}$. *Tuliskan* $\frac{32}{3125}$ *dalam bentuk indeks dengan menggunakan asas* $\frac{2}{5}$. [Ans: $\left(\frac{2}{5}\right)^5$]

2. Calculate the values of the given numbers in index form. *Hitung nilai bagi nombor dalam bentuk indeks yang diberi.*
   a. 2^6 [Ans: 64]

   b. $(-0.7)^3$ [Ans: -0.343]

Exercise 3 A+ Exam Hot Question

1. State each of the following in the form of $\sqrt[n]{a}$. *Nyatakan setiap berikut dalam bentuk* $\sqrt[n]{a}$.

a	b	c	d
$27^{\frac{1}{3}}$	$81^{\frac{1}{4}}$	$m^{\frac{1}{4}}$	$\left(\frac{8}{27}\right)^{\frac{1}{3}}$

2. State each of the following in the form of $a^{\frac{1}{n}}$. *Nyatakan setiap berikut dalam bentuk* $a^{\frac{1}{n}}$.

a	b	c	d
$\sqrt[3]{24}$	$\sqrt[4]{81}$	$\sqrt[5]{n}$	$\sqrt[3]{\frac{64}{125}}$

3. State each of the following in the form of $\sqrt[n]{a}$ and calculate it. *Nyatakan bagi setiap berikut dalam bentuk* $\sqrt[n]{a}$ *dan hitungkan.*

a	b	c	d
$625^{\frac{3}{4}}$	$81^{\frac{3}{4}}$	$32^{\frac{2}{5}}$	$64^{-\frac{2}{3}}$

Note 4 Calculate the value of each of the following. *Hitung nilai bagi setiap ungkapan berikut.*

$5^3 + 5^2$	$5^3 \times 5^2$	$5^3 \div 5^2$	$(5^3)^2$

Quick Mnemonics 1 Only in MathTalk

$5^3 + 5^2$	$5^3 \times 5^2$	$5^3 \div 5^2$	$(5^3)^2$

Skill 7 IMPORTANT

$$(5^2)^3 = (5^3)^2 = 5^6$$

Example 5 KSSM Semakan School Text Book

1. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*
   a. $7^3 \times 7^4$ [Ans: 7^7]

   b. $(0.3)^4 \times (0.3)^5 \times (0.3)^6$ [Ans: 0.3^{15}]

   c. $2m^2 \times 4m^3$ [Ans: $8m^5$]

   d. $3p^4 \times \frac{1}{4}p^6 \times 20p$ [Ans: $15p$]

2. Simplify each of the following. *Ringkaskan bagi setiap yang berikut.*
   a. $m^5 \times n^3 \times m^2 \times n^3$ [Ans: m^7n^6]
   b. $(0.3)^2 \times (0.2)^2 \times 0.3 \times (0.2)^4 \times (0.3)^3$. [Ans: $(0.06)^6$]
   c. $k^3 \times p^4 \times k^2 \times k^5 \times q^2 \times p^3$ [Ans: $k^{10}p^7q^2$]
   d. $-m^4 \times 2n^5 \times 3m \times \frac{1}{4}n^2$ [Ans: $-\frac{3}{2}m^5n^7$]

3. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*
   a. $5^8 \div 5^3$ [Ans: 5^5]
   b. $(-2)^5 \div (-2)^3 \div (-2)^2$ [Ans: 1]
   c. $m^4n^3 \div m^2n$ [Ans: $(mn)^2$]
   d. $25x^2y^3 \div 5xy$ [Ans: $5xy^2$]
   e. $12m^{10} \div 4m^5 \div m^2$ [Ans: $3m^3$]
   f. $-16p^8 \div 2p^5 \div 4p^2$ [Ans: $-2p$]

EXAMPLE Example 6 KSSM Semakan School Text Book

1. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*
   a. $(3^5)^2$ [Ans: 3^{10}]
   b. $(p^3)^9$ [Ans: p^{27}]
   c. $((-z)^6)^3$ [Ans: z^{18}]

2. Determine whether the following equations are true or false. *Tentukan sama ada persamaan berikut benar atau palsu.*
   a. $(4^5)^3 = (4^3)^5$ [Ans: True *Benar*]
   b. $(2^4)^3 = (2^6)^2$ [Ans: True *Benar*]
   c. $(3^2)^6 = (27^2)^4$ [Ans: False *Palsu*]

3. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a. $(7^3 \times 5^4)^3$ [Ans: $7^9 \times 5^{12}$]

b. $(2^4 \times 5^3 \times 11^2)^5$ [Ans: $2^{20} \times 5^{15} \times 11^{10}$]

c. $(p^2q^3r)^5$ [Ans: $p^{10}q^{15}r^5$]

d. $(5m^4n^3)^2$ [Ans: $25m^8n^6$]

e. $\left(\frac{2^5}{3^2}\right)^4$ [Ans: $\frac{2^{20}}{3^8}$]

f. $\left(\frac{2x^3}{3y^7}\right)^5$ [Ans: $\frac{32x^{15}}{243y^{35}}$]

g. $\frac{(3m^2n^3)^3}{6m^3n}$ [Ans: $\frac{9m^3n^8}{2}$]

h. $\frac{(2x^3y^4)^4 \times (3xy^2)^3}{36x^{10}y^{12}}$ [Ans: $12x^5y^{10}$]

Exercise 4

1. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
$4^3 \times 4^5 =$	$2^5 \times 2^1 =$	$m^4 \times m^3 =$	$q^2 \times q^3 =$

2. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
$4^3 \div 4^5 =$	$2^5 \div 2^1 =$	$m^4 \div m^3 =$	$q^2 \div q^3 =$

3. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
$6m^2 \times -m^4 =$	$2z^3 \times 4z^{-2} =$	$9y^5 \times \frac{y^2}{3} =$	$8n^8 \times 2n^2 =$

4. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
$(2^3)^2 =$	$(-3^2)^3 =$	$(b^4)^2 =$	$(z^3)^6 =$

5. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
$(2 \times 4)^2 =$	$(hk)^5 =$	$(xy)^3 =$	$(3 \times 5)^3 =$

6. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
$(m^3n)^4 =$	$(4x^2)^3 =$	$(6q^3)^2 =$	$(n^4q^2)^3 =$

Note 5

Negative index *Indeks negatif*	Zero index *Indeks sifar*	
$a^{-n} = \frac{1}{a^n}; a \neq 0$	$a^0 = 1; a \neq 0$	
$7^{-2} = \frac{1}{7^2}$	$3^0 = 1$	$m^0 = 1$

Quick Mnemonics 2 Only in MathTalk

EXAMPLE Example 7 KSSM Semakan School Text Book

1. State each of the following terms in positive index form. *Nyatakan setiap sebutan berikut dalam bentuk indeks positif.*

   a. a^{-2} [Ans: $\frac{1}{a^2}$]

   b. m^{-4} [Ans: $\frac{1}{m^4}$]

   c. $\frac{1}{8^{-5}}$ [Ans: 8^5]

   d. $\frac{1}{y^{-9}}$ [Ans: y^9]

   e. $2m^{-3}$ [Ans: $\frac{2}{m^3}$]

   f. $\frac{3}{5}n^{-8}$ [Ans: $\frac{3}{5n^8}$]

   g. $\left(\frac{2}{3}\right)^{-10}$ [Ans: $\left(\frac{3}{2}\right)^{10}$]

   h. $\left(\frac{x}{y}\right)^{-7}$ [Ans: $\left(\frac{y}{x}\right)^{7}$]

2. State each of the following in negative index form. *Nyatakan setiap sebutan berikut dalam bentuk indeks negatif.*

   a. $\frac{1}{4^3}$ [Ans: 4^{-3}]

   b. $\frac{1}{m^4}$ [Ans: m^{-4}]

   c. 7^6 [Ans: $\frac{1}{7^{-6}}$]

   d. n^{18} [Ans: $\frac{1}{n^{-18}}$]

   e. $\left(\frac{3}{5}\right)^4$ [Ans: $\left(\frac{5}{3}\right)^{-4}$]

   f. $\left(\frac{m}{n}\right)^{20}$ [Ans: $\left(\frac{n}{m}\right)^{-20}$]

3. Simplify each of the following. *Permudahkan setiap yang berikut.* A+ Exam Hot Question

   a. $3^2 \times 3^5 \div 3^4$ [Ans: 3^3]

   b. $\frac{(2^4)^2 \times (3^5)^3}{(2^8 \times 3^6)^2}$ [Ans: $3^3 2^{-8}$]

   c. $\frac{(4xy^3)^2 \times x^2 y}{(2x^3 y)^5}$ [Ans: $\frac{y^2}{2x^{11}}$]

Exercise 5

1. Simplify each of the following. *Permudahkan bagi setiap yang berikut.*

a	b	c	d
9^0	$(-4)^0$	$(\frac{1}{2})^0$	g^0

2. State each of the following in the form of $\frac{1}{a^n}$. *Nyatakan setiap berikut dalam bentuk* $\frac{1}{a^n}$.

a	b	c	d
$3^{-4} =$	$k^{-3} =$	$m^{-1} =$	$\left(\frac{1}{5}\right)^{-2} =$

3. State each of the following in the form of a^{-n}. *Nyatakan setiap berikut dalam bentuk* a^{-n}.

a	b	c	d
$\frac{1}{6^2} =$	$-\frac{1}{m^4} =$	$\frac{1}{y^3} =$	$\frac{1}{7^5} =$

Example 8 KSSM Semakan School Text Book Challenge Exam Hot Question

1. Simplify each of the following. *Permudahkan setiap yang berikut.*

a. $\frac{(-3x)^3\times(2x^3y^{-5})^2}{108x^4y^3}$ [Ans: $-\frac{x^5}{y^{13}}$]

b. $\frac{\sqrt{m}\,n^{\frac{1}{4}}\times(mn^3)^{\frac{1}{3}}}{(m^{-1}\sqrt{n^3})^{\frac{1}{6}}}$ [Ans: mn]

c. $\frac{(2h)^2\times(16h^8)^{\frac{1}{4}}}{\left(8^{\frac{1}{3}}h\right)^{-2}}$ [Ans: $32h^6$]

2. Calculate the value of each of the following. *Hitungkan nilai bagi setiap yang berikut.* Challenge

   a. $\frac{49^{\frac{1}{2}} \times 125^{-\frac{1}{3}}}{\sqrt[4]{2401} \times \sqrt[5]{3125}}$ [Ans: $\frac{1}{25}$]

   b. $\frac{16^{\frac{3}{4}} \times 81^{-\frac{1}{4}}}{(2^6 \times 3^4)^{\frac{1}{2}}}$ [Ans: $\frac{1}{27}$]

   c. $\frac{\left(243^{\frac{4}{5}} \times 5^{\frac{3}{2}}\right)^2}{\sqrt[4]{81} \times \sqrt{25^4}}$ [Ans: $\frac{81}{5}$]

EXAMPLE Example 9 KSSM Semakan School Text Book

1. Calculate the value of $\sqrt{3} \times 12^{\frac{3}{2}} \div 6$. *Hitungkan nilai bagi* $\sqrt{3} \times 12^{\frac{3}{2}} \div 6$. [Ans: 2916]

2. Calculate the value of x for the equation $3^x \times 9^{x+5} \div 3^4 = 1$. *Hitungkan nilai x bagi persamaan* $3^x \times 9^{x+5} \div 3^4 = 1$. [Ans: $x = -2$]

3. Solve the following simultaneous equations. *Selesaikan persamaan serentak berikut.*
   $25^m \times 5^n = 5^8$ and/ *dan* $2^m \times \frac{1}{2^n} = 2$ [Ans: m=3, n=2]

4. Charlie and Navin performed an experiment to determine the relationship between variable x and variable y. The equation Charlie obtained was $16(4^x) = 16^y$, while the equation Navin got was $3(9^x) = 27^y$. Calculate the value of x and y which satisfy the experiment Charlie and Navin have performed. *Charlie and Navin menjalankan dua uji kaji untuk menentukan hubungan antara pemboleh ubah x dan y. Persamaan yang diperoleh oleh Chalie ialah* $16(4^x) = 16^y$*, sementara Navin mendapat* $3(9^x) = 27^y$ *sebagai dapatan uji kaji yang dijalankan. Hitung nilai x dan nilai y yang dapat memuaskan kedua-dua uji kaji yang telah dijalankan oleh Charlie dan Navin.* [Ans: x=4, y=3]

Exercise 6

1. Calculate each of the following. *Hitungkan bagi setiap berikut.* Exam Hot Question

a	b	c
$5^3 \div (5^4 \times 2^{-3})^2$	$2^8 \div (2^{-3} \div 3^2)^2$	$(5^2 \div 2^2)^3 \div (2^{-3})^2$

2. Calculate each of the following. *Hitungkan bagi setiap berikut.*

a	b	c
$2^{\frac{1}{2}} \times 5^{-\frac{1}{2}} \times 10^{\frac{-3}{2}}$	$2^{\frac{1}{2}} \times 3^{\frac{1}{2}} \times 6^{\frac{1}{2}}$	$64^{2n} \div 4^{-2n} \times 2^n$

3. Find the value of n for each of the following. *Carikan nilai n bagi setiap yang berikut.*

a	b	c
$2^n = 64$	$3^n \times 3 = 3^5 \times 3^3$	$16(3^n) = 81(2^n)$

Tutorial 1 Calculate the following. *Hitungkan bagi setiap yang berikut.*

1. $7^{-3} =$
2. $\left(\frac{3}{4}\right)^{-3} =$
3. $(-156)^0 =$
4. $(-2)^{-4} =$
5. $(-3)^{-3} =$
6. $\left(\frac{2}{7}\right)^{-2} \times 49^{-1} =$
7. $\left(\frac{3}{5}\right)^{-7} \div \left(\frac{3}{5}\right)^{-6} =$
8. $\left(\frac{1}{3}\right)^{-3} \times (-2)^{-1} \div (-2)^{-2} =$
9. $(-4)^{-2} \times \left[(\frac{1}{4})^{-2} \div 4^{-1}\right] =$

Tutorial 2 Simplify each of the following. *Pemudahkan bagi setiap berikut.*

1. $a^8 \times a^0 =$
2. $a^{-10} \times a^9 =$
3. $x^{-2} \div x^{-2} =$
4. $y^3 \div y^{-7} =$
5. $(x^{-3})^2 \div x^{-5} =$
6. $(m^3)^3 \times m^{-4} \div (m^6)^2 =$
7. $(2a^{-3})^5 \times 2a^4 =$
8. $\frac{-4a^3b^2}{32a^4b^{-5}} =$
9. $\frac{(2x)^3 \times (5x^2)^{-2}}{5x^0} =$

Tutorial 3 Challenge

Calculate the following. *Hitungkan setiap yang berikut.*

1. $2 \times (2^3)^2 =$
2. $\left(\frac{1}{64}\right)^{-\frac{3}{4}} \times \left(\frac{1}{64}\right)^{\frac{3}{4}} =$
3. $2^{\frac{1}{3}} \times 3^{\frac{4}{3}} \div 6^{-\frac{2}{3}} =$
4. $(-3)^3 + (-3)^{-3} + \left(-\frac{1}{3}\right)^{-3} - \left(-\frac{1}{3}\right)^3 =$
5. $125^{\frac{2}{3}} \times 625^{\frac{1}{4}} =$
6. $2^{-\frac{1}{5}} \times \left(2^{\frac{2}{5}}\right)^{-2} =$
7. $27^{\frac{1}{2}} \times 45^{\frac{2}{3}} \times 3^{\frac{1}{6}} \times 5^{\frac{1}{3}} =$
8. $\left(\frac{1}{3}\right)^2 + \left(\frac{1}{3}\right)^0 + \left(-\frac{1}{3}\right)^{-2} =$

Tutorial 4 Challenge

State each of the following in indices form. *Nyatakan setiap yang berikut dalam bentuk index.*

1. $4\sqrt{x} =$
2. $(\sqrt{x})^3 =$
3. $\sqrt{\frac{1}{xy}} =$
4. $\frac{1}{2\sqrt{x}} =$

Tutorial 5

Find the value of x. *Cari nilai x.*

1. $2^{-x} = 16$
2. $0.01^x = 1000$
3. $3^x = 81$
4. $8^x = 128$
5. $3^{2x-1} = 1$
6. $2^{x+3} = 4^{2x}$
7. $9^{x-3} = 27^{x+1}$
8. $9^x \cdot 3^{x-1} = 81$ Challenge
9. $4^{x+1} = 8 \times 2^{x+2}$
10. $\frac{1}{4}(2^{2x+3}) = 16^{x-2}$
11. $\frac{9^x}{3^{x-1}} = 27^{2-x}$
12. $27^x \cdot 2^{3x} = 6$
13. $9^x - 9\sqrt{3} = 0$ Challenge
14. $5^{x^2} - 25^{6-2x} = 0$
15. $5^{x+1} \times 25^{1-2x} = 125^x$ Challenge
16. $2^{x-1} + 2^{x-2} + 2^{x-3} = 448$ Challenge

Tutorial 6 Exam Hot Question

1. $8^2 = 2^n, n = ?$
2. If *Jika* $32^x = 8$, Then *maka* $x = ?$
3. If *Jika* $2^{3n-1} = 32$, $n = ?$
4. If *Jika* $2^x = \frac{1}{8}$, $x = ?$
5. If *Jika* $32^x = 4$, $x = ?$
6. Solve *Selesaikan* $3^{2x-5} = 5^0$
7. Solve *Selesaikan* $\frac{1}{2^x} = 64$
8. If *Jika* $32^x = \frac{1}{4}$, $x = ?$
9. If *Jika* $3^{2x^2+2} = \frac{1}{9^{2x}}, x = ?$

Tutorial 7 Exam Hot Question

1. If *Jika* $4^x = 8$, $9^x = ?$。
2. If *Jika* $16(2^x) = \frac{1}{2}$, $x = ?$。
3. Solve *Selesaikan* $x^{-\frac{2}{3}} = 9$。
4. Solve *Selesaikan* $\frac{1}{2^{x-1}} = \frac{1}{16}$。
5. If *Jika* $2^x + 32 = 40$, $x = ?$
6. If *Jika* $2^{x+1} \cdot 4^{2x+1} = 16$, $x^2 = ?$
7. If *Jika* $x^3 = \frac{1}{27}$, $x^{-2} = ?$
8. If *Jika* $a^{-3} = 64$, $a^{\frac{1}{2}} = ?$
9. If *Jika* $x^2 = \frac{1}{64}$, $x^{-\frac{2}{3}} = ?$
10. Given *Diberi* $9^{n-2} = 243$, find the value of n. *cari nilai n.*

Answer *Jawapan*

Exercise 1

1. a.$3 \times 3 \times 3 \times 3 \times 3$
   b.$(-0.02) \times (-0.02) \times (-0.02)$
   c.$\left(\frac{3}{4}\right) \times \left(\frac{3}{4}\right) \times \left(\frac{3}{4}\right) \times \left(\frac{3}{4}\right)$
   d.$(xyz) \times (xyz)$
2. a.243 b.-8×10^{-6} c.$\frac{81}{256}$ d.1000
3. a.3^4
   b.2^5
   c.11^2
   d.$-\frac{4}{5}$

Exercise 2

	1	2
a	8	256
b	8	6
c	1000	3
d	25	2
e	8	4
f	7	3
g	81	2

Exercise 3

1. a.$\sqrt[3]{27}$ b.$\sqrt[4]{81}$ c.$\sqrt[4]{m}$ d.$\sqrt[3]{\frac{8}{27}}$
2. a.$24^{\frac{1}{3}}$ b.$81^{\frac{1}{4}}$ c.$n^{\frac{1}{5}}$ d.$\left(\frac{64}{125}\right)^{\frac{1}{3}}$
3. a.$\sqrt[4]{625^3}$ b.$\sqrt[4]{81^3}$ c.$\sqrt[5]{32^2}$ d.$\frac{1}{\sqrt[3]{64^2}}$

Exercise 4

1. a.4^8 b.2^6 c.m^7 d.q^5
2. a.4^{-2} b.2^4 c.m d.q^{-1}
3. a.$-6m^6$ b.$8z$ c.$3y^7$ d.$16n^{10}$
4. a.2^6 b.-729 c.b^8 d.z^{18}
5. a.2^6 b.h^5k^5 c.x^3y^3 d.15^3
6. a.$m^{12}n^4$ b.$64x^6$ c.$36q^6$ d.$n^{12}q^6$

Exercise 5

1. a.1 b.1 c.1 d.1
2. a.$\frac{1}{3^4}$ b.$\frac{1}{k^3}$ c.$\frac{1}{m}$ d.5^2
3. a.6^{-2} b.$-m^{-4}$ c.y^{-3} d.7^{-5}

Exercise 6

1. a.$\frac{64}{3125}$ b.1327104 c.15625
2. a.$\frac{1}{50}$ b.6 c.2^{17n}
3. a.$n = 6$ b.$n = 7$ c.$n = 4$

Tutorial 1

1. $\frac{1}{343}$
2. $\frac{64}{27}$
3. 1
4. $\frac{1}{16}$
5. $-\frac{1}{27}$
6. $\frac{1}{4}$
7. $\frac{5}{3}$
8. -54
9. 4

Tutorial 2

1. a^8
2. $\frac{1}{a}$
3. 1
4. y^{10}
5. $\frac{1}{x}$
6. m^{-7}
7. $64a^{-11}$
8. $-\frac{b^7}{8a}$
9. $\frac{1}{40}$

Tutorial 3

1. 2^7
2. 1
3. 18
4. -54
5. 125
6. $\frac{1}{2}$
7. 135
8. $10\frac{1}{9}$

Tutorial 4

1. $4x^{\frac{1}{2}}$
2. $x^{\frac{3}{2}}$
3. $(xy)^{-\frac{1}{2}}$
4. $\frac{1}{2}x^{-\frac{1}{2}}$ or $\left(2x^{\frac{1}{2}}\right)^{-1}$

Tutorial 5

1. $x = -4$
2. $x = -\frac{3}{2}$
3. $x = 4$
4. $x = \frac{7}{3}$
5. $x = \frac{1}{2}$
6. $x = 1$
7. $x = -9$
8. $x = \frac{5}{3}$
9. $x = 3$
10. $x = \frac{9}{2}$
11. $x = \frac{5}{4}$
12. $x = \frac{1}{3}$
13. $x = \frac{5}{4}$
14. $x = -6$ or $x = 2$
15. $x = \frac{1}{2}$
16. $x = 9$

Tutorial 6

1. 6
2. $\frac{3}{5}$
3. 2
4. -3
5. $\frac{2}{5}$
6. $x = \frac{5}{2}$
7. $x = -6$
8. $-\frac{2}{5}$
9. -1

Tutorial 7

1. 27
2. -5
3. $\frac{1}{27}$
4. 5
5. 3
6. $\frac{1}{25}$
7. 9
8. $\frac{1}{2}$
9. 4
10. $\frac{9}{2}$

热卖中

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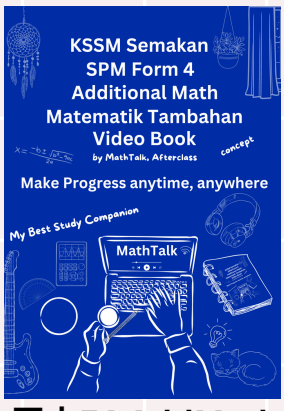

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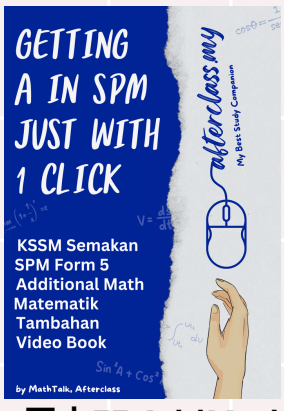

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