



LAGOS STATE MINISTRY OF EDUCATION
UNIFIED SCHEMES OF WORK FOR PRIMARY SCHOOLS

(MATHEMATICS FOR PRIMARY SCHOOL)
PRIMARY SIX SECOND TERM

WKS	TOPICS	LEARNING OBJECTIVES	LEARNING ACTIVITIES	EMBEDDED CORE SKILLS	LEARNING RESOURCES
1.	Revision of first term's topics: Emphasis on whole numbers, decimal numbers and fractions.	Pupils should be able to: i. revise the first term on addition, subtraction and multiplication and division of (a) whole numbers (b) decimal numbers (c) fraction ii. participate in Resumption Test	Pupils: - in small groups practice exercises on first term topics and questions from first term examination - as individual participate in the Resumption Test	Communication and Collaboration. Leadership and Personal development. Critical thinking and Problem solving.	Exercises from class work and home work. Questions from 1st term examination. Mathematics Textbooks.
2	Ratio and Proportion - Direct Proportion - Inverse Proportion - Real life problems on ratio and proportion. -Quantitative Reasoning. IMPORTANCE: -It helps in the sharing of items -Shares and dividends	Pupils should be able to: a. discuss the meaning of ratio and solve problems on ratio b. interpret and solve direct proportion equations c. interpret and solve inverse proportion equations e. solve Quantitative Reasoning exercises on ratio and proportion	Pupils in small groups: - express their ages in ratio and record. -discuss the meaning of ratio and solve problems on ratio e.g. There are 30 boys and 40 girls in a class. What is the ratio of boys to girls? $= \frac{\text{Boys}}{\text{Girls}} = \frac{30}{40} = \frac{3}{4}$ ratio = 3:4 - interpret and solve questions on direct proportion e.g. 20 shoes cost N300. What is the cost of 25 shoes at the same rate? 20 shoes cost = N300.00 1 shoe cost = $\frac{N300}{20} = N15.00$ ∴ 25 shoes will cost $25 \times N15 = N375.00$ -interpret and solve inverse proportion equations. e.g. 9 men can finish a job in 8 days. How many men will finish the job in 12 days, if they work at the same rate? 9 men takes 8 days 1 man will take = $9 \times 8 \text{ days} = 72 \text{ days}$ number of men for 12days = $\frac{72 \text{ days}}{12 \text{ day}}$ = 6 6 men take 12 days - share N450 between Audu and Dele in ratio 2:3 Total ratio = 2+3 = 5 Audu's share = $\frac{2}{5} \times N450$ = 2 x N90 = N180 Dele's share = $\frac{3}{5} \times N450$ = 3 x N90 = N270 Therefore; Audu will get N180 and Dele gets N270 Quantitative Reasoning e.g i. ii. 	Communication and Collaboration Citizenship	Chart on ratio and proportion Mathematics textbook Pupils ages www.onlinemathlearning.com www.coolmath4kids.com
3	Percentages Importance: -Collation of school results -It helps in the distribution and allocation of social amenities to communities or states in a country.	Pupils should be able to: a. express one number as a percentage of another b. solve exercises on percentage increase and decrease c. solve real life problems on percentages d. solve quantitative reasoning.	Pupils in small groups: -study percentage scores of a pupil's result in an examination. - express one number as a percentage of another e.g. what percentage of N400 is N20? $\frac{N20}{N400} \times 100\% = 5\%$ N400 1 - solve exercises on percentage increase	Critical thinking and Problem solving	Pupils scores in examination Chart on percentage Multiplication table www.study.com www.mathematicsonline.com www.youtube.com/peage

and decrease. Thus:
 i. % increase = $\frac{\text{increase}}{\text{initial value}} \times 100\%$
 ii. % decrease = $\frac{\text{decrease}}{\text{initial value}} \times 100\%$

Example: i. The population of a village increases from 800 people to 1000 people. What is the percentage increase?

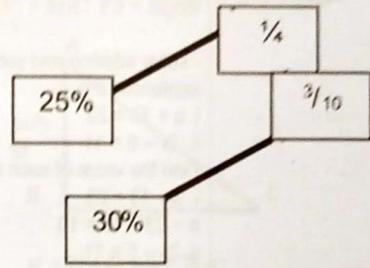
Increase = $1000 - 800 = 200$
 \therefore % increase = $\frac{200}{800} \times 100\% = \frac{1}{4} \times 100\% = 25\%$

ii. Decrease N300 by 25% = $N300 \times \frac{25}{100} = N75$
 $\therefore N300 - N75 = N225$

Method II
 Decrease N300 by 25%

= $(100 - 25)\% = 75\%$
 $\therefore N300 \times 75\%$
 = $N300 \times \frac{75}{100} = N225$

Quantitative Reasoning



4 Indices (Power)
 -Numbers in index form
 -Rules of indices
 -Real life problems
 -Quantitative Reasoning

Importance
 They are used in computer games.
 -They are used in Engineering, Economics, Accounting and Finances

Pupils should be able to:
 a. write numbers in index forms
 b. solve exercises involving
 c. use rule of indices of multiplication and division to solve exercises
 d. use indices (power) to solve daily life activities.
 e. solve quantitative reasoning on indices.

Pupils as individual sing or recite square table song i.e. $2^2, 3^2, 4^2, 5^2$ etc
 = 4, 9, 16, 25, ...
 - write numbers in index forms e.g.
 $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$
 $27 = 3 \times 3 \times 3 = 3^3$

- solve exercises involving power e.g.
 i. $\frac{2^3 \times 3}{2^2 \times 3^2}$
 $\frac{2^3 \times 3}{2^2 \times 3^2} = \frac{2 \times 2 \times 2 \times 3}{2 \times 2 \times 3 \times 3} = \frac{1}{3}$

- use rule of indices of multiplication and division to solve exercises i.e
 i. $n^2 \times n^3 = n^{2+3} = n^5$
 e.g. $3^3 \times 3^4 = 3^{3+4} = 3^7$
 $x^7 \div x^5 = x^{7-5} = x^2$
 e.g. $4^5 \div 4^2 = 4^{5-2} = 4^3$
 NB: any number raised to power zero is equal to 1^0
 i.e. $5^0 = 1$ or $9^0 = 1$

Simplify: $2^3 \times 2 + 2^2 \times 2^0$
 = $2^{3+1} + 2^{2+0} = 2^4 = 16$
 e.g. evaluate: $5^2 \times 3^0 = 5 \times 5 \times 1 = 25$

- use indices (power) to solve daily life activities. e.g. Pencils are arranged in pile of 3. Find the total number of pencils in 4 piles.

Total number of pencils in 4 piles = 3^4
 = $3 \times 3 \times 3 \times 3 = 81$ pencils

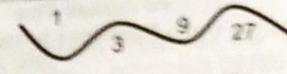
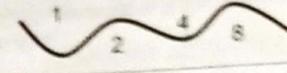
Quantitative Reasoning

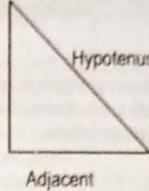
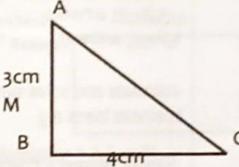
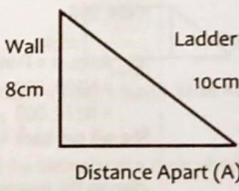
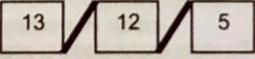
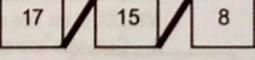
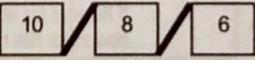
- i. 2 4 8 16 32
- ii. 3 9 81 243

Leadership and Personal development.

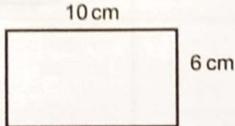
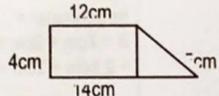
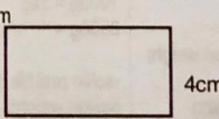
Chart of square
 Chart of square root
 Multiplication table
 Chart of indices
 Chart of rules of indices

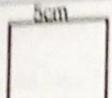
www.khanacademy.com
www.youtube.com/indices

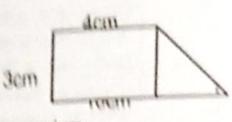
WKS	TOPICS	LEARNING OBJECTIVES	LEARNING ACTIVITIES	EMBEDDED CORE SKILLS	MATHEMATICS LEARNING RESOURCES
			iii.  iv. 		
5	Open sentences: i. Addition and subtraction ii. Multiplication and division iii. Reciprocal of numbers. b. Real life Problems on open sentences c. Quantitative Reasoning Importance: -It helps to project and plan for an event that is about to occur.	Pupils should be able to: a. interpret word problems and real life problems into open sentences and solve correctly a. solve addition and subtraction of open sentences b. solve multiplication and division exercise on open sentences. Reciprocal of number: The reciprocal of 5 is $\frac{1}{5}$ and reciprocal $\frac{1}{5}$ is 5. Also the reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$. Since $\frac{2}{3} \times \frac{3}{2} = 1$ e. solve quantitative reasoning on open sentences	Pupils in groups: - tell stories on open sentences and solve them. - interpret word problems and real life problems into open sentences and solve correctly e.g. the length of a rectangle is 6 times its width. If the perimeter is 182cm. Calculate its length. Let the width be x $\therefore \text{Length} = 6x$ $x = 6x$ Perimeter = 2 (L + W) $182\text{cm} = 2(6x + x)$ $= 2(7x)$ $182\text{cm} = 14x$ Divide both sides by 14 i.e. $\frac{182\text{cm}}{14} = \frac{14x}{14}$ $x = 13\text{cm}$ length = $6 \times 13\text{cm} = 78\text{cm}$ - solve addition and subtraction of open sentences e.g. i. $a + 13 = 23$ ii. $2x - 5 = 11$ Find the value of each letter i. $a + 13 = 23$ $a = 23 - 13 = 10$ ii. $2x - 5 = 11$ $2x = 11 + 5$ $2x = 16$ Divide both sides by the coefficient of x (i.e.2) $\therefore \frac{2x}{2} = \frac{16}{2}$ $x = 8$ -solve multiplication and division exercise on open sentences. e.g. Toyin thinks of a number, she multiplies it with 5 and her result is 15. Find the number. Let the number be 'a' multiply it by 5. $a \times 5 = 5a$ $\therefore 5a = 15$ Multiply both sides by $\frac{1}{5}$ $\therefore 5a \times \frac{1}{5} = 15 \times \frac{1}{5}$ $a = 3$ Reciprocal of numbers The reciprocal of 5 is $\frac{1}{5}$ and reciprocal $\frac{1}{5}$ is 5. Also the reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$. Since $\frac{2}{3} \times \frac{3}{2} = 1$ Quantitative Reasoning i. $\begin{cases} 4 & 2 \\ 3 & 3 \end{cases} = (4 \times 3) - (3 \times 2)$ $= 12 - 6 = 6$ ii. $\begin{cases} 5 & 4 \\ 2 & 4 \end{cases} = 5 \times 4 - 2 \times 4$ $= 20 - 8 = 12$	Communication and Collaboration skills Critical thinking and Problem solving	Cardboard paper Chart of equations Flash cards on open sentences www.pinterest.com/learn2go/ www.prodigygame.com
6	Length and Pythagoras Rules Importance: -It helps to describe the locations of two or three	Pupils should be able to: (a) identify the three sides of a right angled triangle (b) state the Pythagoras Rules	Pupils in small groups: - draw right angled triangle of any given dimensions and use scissors to cut the shape out. - identify the three sides of a right angled triangle	Communication and Personal development Creativity and imagination	Cardboard paper Chart of pythagora's theorem Mathematics textbooks Pencil Ruler

WKS	TOPICS	LEARNING OBJECTIVES	LEARNING ACTIVITIES	EMBEDDED CORE SKILLS	LEARNING RESOURCES
	<p>areas that are closely situated. -It helps to make use of a short-cut route between two major long routes.</p>	<p>(c) identify the three sides of a right angled triangle. (d) use the Pythagoras rules to find the unknown length of a right angled triangle (e) interpret and solve word problems on Pythagoras. (f) solve quantitative reasoning exercises on Pythagoras</p>	<div style="text-align: center;">  </div> <p>-state the Pythagoras Rules e.g</p> <p>i. $H^2 = \sqrt{O^2 + A^2}$ $H = \sqrt{O^2 + A^2}$</p> <p>ii. $O^2 = H^2 - A^2$ $O = \sqrt{H^2 - A^2}$</p> <p>iii. $A^2 = H^2 - O^2$ $A = \sqrt{H^2 - O^2}$</p> <p>Where: H = Hypotenuse O = Opposite A = Adjacent</p> <p>-use the Pythagoras rules to find the unknown length of a right angled triangle e.g.</p> <div style="text-align: center;">  </div> <p>$x^2 = 3^2 + 4^2 = 9 + 16 =$ $x = \sqrt{9 + 16} = \sqrt{25} = 5\text{cm}$</p> <p>-interpret and solve word problems on Pythagoras.</p> <p>i. A ladder of length 10cm is rested on a wall of length 8cm high. What is the distance between the foot of the ladder and the wall?</p> <p>ii. Draw:</p> <div style="text-align: center;">  </div> <p>∴ Distance apart,</p> <p>$A^2 = H^2 - O^2$ $= 10^2 - 8^2$ $A = \sqrt{100 - 64} = \sqrt{36}$ $A = \sqrt{36} = 6\text{cm}$</p> <p>Quantitative Reasoning</p> <p>i. </p> <p>ii. </p> <p></p>		<p>www.pinterest.com www.study.com www.youtube.com/length</p>
7	MID TERM BREAK	<p>Pupils should be able to: i. revise exercises on topics learnt ii. participate in midterm test</p>	<p>Pupils in small groups partake in quiz. i. revise exercises on topics learnt</p>	<p>Critical thinking and Problem solving. Communication and</p>	<p>Questions from class work, home work exercises</p>

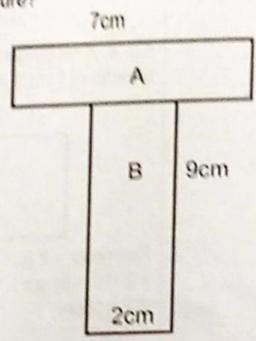
WKS	TOPICS	LEARNING OBJECTIVES	LEARNING ACTIVITIES	EMBEDDED CORE SKILLS	MATHE LEA RES Mathematics
			ii. participate in midterm test	Collaboration Leadership and Personal development.	Mathematics
8	COMMERCIAL MATTER MONEY <ul style="list-style-type: none"> - Profit and Loss - Simple Interest - Discount and Commission - Rate and Tax - Share and Dividend <p>Importance: -It gives an insight to plan well on profit making business. -It helps to be prudent in spending e.g. shares.</p>	<p>Pupils should be able to</p> <p>a. calculate the profit and loss on sales. Thus $\% \text{ Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100\%$ $\% \text{ Loss} = \frac{\text{Loss}}{\text{Cost Price}} \times 100\%$</p> <p>i. discuss the meaning of discount and commission and calculate the discount and commission on sales of commodities</p> <p>ii. explain the meaning of tax and rate, use copies of bills to calculate tax and rate</p> <p>iii. If on N1 he pays 5k. He will pay tax of $5k \times N15,000 = \frac{N5}{100} \times N15,000 = N750$</p> <p>v. calculate shares and dividends of a company</p>	<p>Pupils in small groups: - transact sales with dummy money on these:</p> <p>i. Profit and loss. ii. Simple interest. iv. Discount and Commission.</p> <p>- study different bills and exchange the bills in turns among the groups. Each group practices the activity given on discount, commission, tax, share, dividend respectively.</p> <p>- calculate the profit and loss on sales. Thus $\% \text{ Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100\%$ $\% \text{ Loss} = \frac{\text{Loss}}{\text{Cost Price}} \times 100\%$</p> <p>e.g. Mr. Kunle purchased a radio for N15,000 and sold it to Mr. Uche for N18,000. Find his percentage profit</p> <p>Cost price = N15,000 Selling Price = N18,000 Profit = Selling Price – Cost Price N18,000 – N15,000 = N3,000 $\therefore \% \text{ Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100\%$ $\% \text{ Profit} = \frac{N3000}{15000} \times 100\% = 20\%$</p> <p>-calculate and solve simple interest on business loans e.g.</p> <p>Simple Interest = $\text{Principal} \times \text{Time} \times \frac{\text{Rate}}{100}$</p> <p>v. Mrs. Awoyade borrowed N120,000 from a bank for 3 years at an annual interest rate of 15% per annum. Find the interest on the loan and how much will she pay back to the bank?</p> <p>Principal = N120,000 Time = 3 years Rate = 15% $\therefore I = \frac{P \times T \times R}{100}$ $= \frac{N120,000 \times 3 \times 15}{100}$ $= N54,000$</p> <p>vi. Amount = Principal + Interest = N120,000 + N54,000 = N174,000 She will pay back = N174,000</p> <p>-discuss the meaning of discount and commission and calculate the discount and commission on sales of commodities e.g. A supermarket gives a discount of 5% on goods purchase during a festivity. How much will a man pay for a good of N7,000? $\% \text{ Discount} = \frac{N7000 \times 5}{100}$ = N350 He will pay = N7000 – N350 = N6,650</p> <p>-explain the meaning of tax and rate, use copies of bills to calculate tax and rate e.g. A man's annual income is N25,000. If N10,000 is tax free of his income.</p> <p>a. Calculate how much of his income is taxable.</p> <p>b. If he pays tax at the rate of 5k per naira, how much has he to pay? His income = N25,000 His tax free = N10,000 Taxable income = N25,000 – N10,000 = N15,000</p> <p>iv. If on N1 he pays 5k. He will pay tax of 5k</p>	Citizenship Communication and collaboration skills	Hart on mark index Cardboard pa Shop corner Home used ite empty carton Dummy money -Photocopies o certificate. -Photocopies o on shares of a -Water rate bill. -Electricity bill. -Photocopy of p monthly salary. www.study.com/ny

WKS	TOPICS	LEARNING OBJECTIVES	LEARNING ACTIVITIES	EMBEDDED CORE SKILLS	LEARNING RESOURCES
			<p>$\times N15,000 = \frac{N5}{100} \times N15,000 / 1 = N750$</p> <p>-calculate shares and dividend of a company e.g. A woman bought 300 shares in a Company. How much dividend should she receive if dividends are paid at N50 per share? On a share, a dividend of N50 is paid. On 300 shares, a dividend of N50 x 300 will be paid = N50 x 300 = N15,000</p>		
9	<p>Perimeters and Areas of Plane Shapes</p> <p>-Regular plane shapes e.g. rectangle, square, trapezium, parallelogram, circle etc. triangle -Properties of each plane shape -Area and perimeter of irregular shapes -Solve real life problems.</p> <p>Importance: -Surveyors use it to measure the dimensions of land in plots, acres, hectares etc.</p>	<p>Pupils should be able to:</p> <p>a. discuss the properties of the plane shapes. b. discuss the meaning and calculate the perimeter of plane shapes i.e. Perimeter of a rectangle = 2 (Length + Breadth)</p>	<p>-Pupils as individuals use scissors to cut different plane shapes from cardboard, carpet, paper, use ruler or tape measure to measure the dimensions (sides) and then calculate the perimeter by adding all the sides of each shape.</p> <p>-Pupils in small groups discuss the properties of the plane shapes.</p> <p>-Pupils in pair discuss the meaning and calculate the perimeter of plane shapes i.e. Perimeter of a rectangle = 2 (Length + Breadth)</p> <p>e.g. a. A rectangle is of length 10cm and breadth of 6cm. Find its perimeter</p> <div style="text-align: center;">  </div> <p>Perimeter = 2 (L + B) = 2 (10 + 6) cm = 2 x 16cm = 32cm</p> <p>- Perimeter of a square = 4 x length A square has a length of 10cm. what is its perimeter? Perimeter = 4 x length = 4 x 10cm = 40cm</p> <p>- Perimeter of a trapezium equals to the sum of distance round it. E.g. find the perimeter of the figure below.</p> <div style="text-align: center;">  </div> <p>Perimeter = 12cm + 5cm + 14cm + 4cm = 35cm</p> <p>-Find the perimeter of a circle whose radius is 7cm. Perimeter of a circle = 2 π r $2 \times \frac{22}{7} \times 7\text{cm} / 1$ = 2 x 22cm = 44cm</p> <p>The perimeter of a circle can also be calculated using diameter i.e. Circumference = π d</p> <p>-calculate the area of a rectangle, square, trapezium etc a. area of a rectangle = Length x Breadth e.g.</p> <div style="text-align: center;">  </div> <p>Area = 7cm x 4cm = 28cm²</p>	Creativity and imagination	<p>Carpet Cardboard paper Scissors Pencil Ruler</p> <p>www.sciencedirect.com www.youtube.com/shapes</p>

b. 
 Area of a square = Length x Length =
 $5\text{cm} \times 5\text{cm} = 25\text{cm}^2$

c. 
 Area of a trapezium
 $= \frac{1}{2} \times (a + b) \times \text{height}$
 $= \frac{1}{2} \times (4 + 10)\text{cm} \times 3\text{cm}$
 $= \frac{1}{2} \times 14\text{cm} \times 3\text{cm}$
 $= 7\text{cm} \times 3\text{cm} = 21\text{cm}^2$
 d. Area of a circle = πr^2
 What is the area of circle whose radius is 7cm?
 Area = $\pi r^2 = 22/7 \times 7 \times 7\text{cm}^2 = 154\text{cm}^2$

- find the area and perimeter of irregular shape e.g. What is the area and perimeter of this figure?

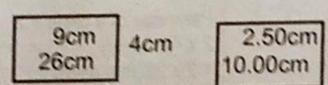


Area = firstly, detach the small regular shapes from irregular shape, calculate each area and add their areas together, i.e.

Area of A = $7\text{cm} \times 2\text{cm} = 14\text{cm}^2$
 Area of B = $9\text{cm} \times 2\text{cm} = 18\text{cm}^2$
 \therefore Area of the shape = $14\text{cm}^2 + 18\text{cm}^2 = 32\text{cm}^2$
 Its perimeter =
 $P = 7\text{cm} + 2\text{cm} + 2.5\text{cm} + 9\text{cm} + 2\text{cm} + 9\text{cm} + 2.5\text{cm} + 2\text{cm} = 36\text{cm}$

solve real life problems on perimeters and area of regular and irregular shapes.

Quantitative Reasoning



10 Weight
 -Conversion of units.
 -Addition, subtraction, multiplication and division on weight.
 -Quantitative Reasoning

Importance:
 Meat, chicken, turkey sellers use weight to determine the prices of their products.

Pupils should be able to:
 a. express the same weights in different units e.g. gram, kilogram, tonneeg. $1000\text{g} = 1\text{kg}$
 $1000\text{kg} = 1\text{tonne}$
 $1000000\text{g} = 1\text{tonne}$
 i. How many kilograms are in 8500g?
 $1000\text{g} = 1\text{kg}$
 $8500\text{g} = \frac{8500\text{g}}{1000} = 8.5\text{kg}$
 b. solve real life problems on weight
 c. solve quantitative reasoning exercises related to weight.

Pupils in small groups:
 - convert weight to tonnes, grammes and kilograms
 - express the same weights in different units e.g. gram, kilogram, tonneeg. $1000\text{g} = 1\text{kg}$
 $1000\text{kg} = 1\text{tonne}$
 $1000000\text{g} = 1\text{tonne}$
 i. How many kilograms are in 8500g?
 $1000\text{g} = 1\text{kg}$
 $8500\text{g} = \frac{8500\text{g}}{1000} = 8.5\text{kg}$
 -solve real life problems on weight e.g. a basket weights 3kg 350g and 1kg 420g drops from the basket, what will be the new weight of the basket?

Communication and Collaboration
 Critical thinking and Problem solving

Samples of different objects
 Weighing scale
 Spring balance
 Chart on weight conversion
www.mathshun.com

WKS	TOPICS	LEARNING OBJECTIVES	LEARNING ACTIVITIES	EMBEDDED CORE SKILLS	LEARNING RESOURCES
			<p>3kg 350g 1kg 420g 1kg 930g</p> <p>Quantitative Reasoning</p> <p>i.</p> <p>ii.</p>		
11	Revision PROJECT	Pupils should be able to: i. revise topics in 2nd term	Pupils in small groups practice 2nd term's topics together. Pupils in groups construct a rectangular board ruler with plywood.	Communication and collaboration Leadership and personal development	Exercises from class work and homework Mathematics textbooks
12	EXAMINATION	EXAMINATION	EXAMINATION	EXAMINATION	EXAMINATION
13	EXAMINATION	EXAMINATION	EXAMINATION	EXAMINATION	EXAMINATION