VANCOUVER HIGH SCHOOL

VANCOUVER, BRITISH COLUMBIA, CAN.

COURSE OF STUDY

FOR THE YEAR

1894-5

AND

CATALOGUE

FOR THE YEAR

1893-4

VANCOUVER:
News-Advertiser Printing and Bookbinding Establishment, Cambie Street.
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BOARD OF SCHOOL TRUSTEES

VANCOUVER, B. C.

A. H. B. MACGOWAN, *Chairman*, '95.
C. W. MURRAY, *Secretary*, '95.
WM. TEMPLETON, '96.
C. C. ELDRIDGE, '96.
G. R. GORDON, '96.
JOHN MCALLISTER, '95.

FACULTY OF INSTRUCTION

HIGH SCHOOL DEPARTMENT

ALEXANDER ROBINSON, B.A. (Dal.), Principal—
Greek and French.
JAMES C. SHAW, B.A. (Dal.), A. M. (Harv.)—
Latin and Ancient History.
JOHN H. KERR, B.A., (Toronto)—
Mathematics and Commercial Branches.
GEORGE E. ROBINSON, B.A., (Dal.)—
Mathematics.
JOSEPH K. HENRY, B.A., (Dal.)—
Science and English.

PUBLIC SCHOOL DEPARTMENT

F. M. COWPERTHWAITE, B.A., (U.N.B.) - Principal Central School
G. H. TOM - - - - - Principal East End School
T. A. MCGARRIGLE, B.A., (U.N.B.) - - Principal West End School
G. W. JAMIESON - - - Principal Mount Pleasant School

VANCOUVER HIGH SCHOOL.

TIME OF SESSION.

There are two terms in the Academic year, commencing respectively on the second Monday in August and the first Monday in January after New Year's Day. The hours of teaching are from 9 a.m. to 12 m., and from 1 p.m. to 3:30 p.m., from April to October, inclusive; and from 9:30 a.m. to 12 m., and from 1 p. m. to 3 p.m., from November to March inclusive.

ADMISSION.

There are two Entrance Examinations in each year, in December and June respectively. The Examinations are under the control of the Education Department of the Province. The following are the subjects of examination:—

1. *Spelling.*—To be able to spell correctly the ordinary words in the Fifth Reader and Spelling Book.

2. *Reading.*—To read correctly and intelligently any passage in the Fifth Reader.

3. *Writing.*—To write neatly and legibly.

4. *Arithmetic.*—To have a good general knowledge of numeration, notation, the four simple and compound rules, reduction, vulgar and decimal fractions, proportion, simple interest and percentage, compound interest and discount.

5. *Mental Arithmetic.*—To be able to solve mentally any ordinary problems.

6. *Grammar.*—To know the principal grammatical forms and definitions, and to be able to analyze and parse any ordinary sentence.

7. *Geography.*—To have a good knowledge of the earth's planetary relations, of the general principles of physical geography, and of the outlines of the maps of Europe, Asia, Africa, America, Oceania, and of the British Empire, and more particularly of that of the Dominion of Canada.

8. *English History.*—To know the different periods and outlines of English History.

9. *Canadian History.*—To have a knowledge of the outlines of Canadian History.

10. *Composition.*—To be able to write a letter correctly as to form and punctuation, and to write a brief composition on any simple subject.

11. *Anatomy, Physiology and Hygiene.*—To have a general knowledge of the subject.

In order that a candidate may obtain admission to the High School, the aggregate of his marks must amount to at least 60 per cent. of the total marks assigned for all the subjects of examination, and at least 30 per cent. must be obtained in each subject. Candidates will not be admitted who fail to gain 50 per cent. on the grammar paper.

Candidates who have been unable to attend the regular entrance examination, may, on application to the Principal, obtain a special examination.

Teachers of the Public Schools, who have already obtained certificates by examination in the Province, may be admitted to the High School as pupils without being required to pass the usual entrance examination.

CLASSIFICATION.

There are five classes, designated "A," "B," "C," "D" and "E," respectively. All admissions to the High School are to the "E," or lowest class, unless the candidate can show his ability to enter a higher class. Promotion Examinations are held in December and June of each year.

COURSE OF STUDY.

CLASS "E."

1. *English Language.*—(*a*) Reading.—Sixth Reader; the principles of ortheopy and elocution, spelling, derivation of words, rendering of poetry into prose, and generally the formation of a good English style.

(*b*). Composition.—The structure of sentences and paragraphs, correction of errors, familiar and business letters, themes on familiar subjects.

(*c*). Grammar.—Smith's English Grammar, analysis and parsing of passages from authors not prescribed.

2. *Geography.*—Particular geography of Europe. Elementary exercises on the use of the terrestrial globe.

3. *History.*—British and Canadian History.

4. *Book-keeping.*—Single entry Book-keeping, commercial forms.

5. *Mathematics:*—(*a*).—Written Arithmetic.—Percentage, simple and compound interest, discount, profit and loss, extraction of square and cube roots.

(*b*). Mental Arithmetic.

(*c*). Algebra.—Four fundamental rules, factoring, elementary formulæ.

(*d*). Geometry.—Euclid Book I., first twenty propositions, with deductions.

6. *Classics:*—Latin.—To the end of the Regular Verb.

CLASS "D."

1. *English Language.*—Extension of the course for class "E."

2. *Geography.*—Particular geography of Asia, with special reference to China, Japan and India. Further uses of terrestrial globe. Oral instruction in physical geography.

3. *History:*—(*a*). Canadian History completed.

(*b*). British History continued, with special reference to the history of the nineteenth century.

4. *Book-keeping.*—Double entry Book-keeping.

5. *Mathematics:*—(*a*). Written Arithmetic.—Stocks and shares, circulating decimals, miscellaneous problems.

(*b*). Mental Arithmetic.

(*c*). Algebra.—Factoring continued, finding the H. C. F. and the L. C. M., fractions, simple equations.

(*d*). Geometry.—Euclid Book I., completed and reviewed, with deductions.

6. *Classics:*—(*a*). Latin.—Pronoun and regular verb reviewed, irregular verb, elementary Latin construction.

(*b*). Greek.—Declension of the noun and adjective.

CLASS "C."

1. *English Language and Literature.*—Extension of the course for class "D." Increased attention given to the derivation of words. Critical reading of an English classic.

2. *Geography.*—Particular geography of Oceania, with special reference to Australia. Increased attention to physical geography and the uses of the terrestrial globe.

3. *History:*—(*a*). British History.—Critical study of Stuart period.

(*b*). Outlines of Ancient History, with special reference to the history of Rome.

4. *Science.*—Elements of Botany.

5. *Mathematics:*—(*a*). Written Arithmetic.—The Metric system, alligation, miscellaneous problems.

(*b*). Mental Arithmetic.

(*c*). Algebra.—Simple equation continued, extraction of square and cube roots, introduction to quadratics.

(*d*). Geometry.—Euclid Book II., treated according to both the diagrammatic and line methods, algebraical equivalents, deductions.

(*e*). Mensuration.—Areas of surfaces.

6. *Classics:*—(*a*). Latin.—Latin grammar completed and reviewed, introduction to Latin prose composition, Cæsar, *De Bello Gallico,* Book I.

(*b*). Greek.—To the end of the regular verb.

CLASS "B."

1. *English Language and Literature.*—Extension of the course for class "C." Critical reading of an English classic, history of English literature, rhetoric.

2. *Geography.*—The subject completed and reviewed.

3. *History:*—(*a*). British History.—Critical study of the Guelph period.

(*b*). Outlines of Ancient History, with special reference to the history of Greece.

4. *Science:*—(*a*). Botany.—The subject continued.

(*b*). Chemistry.—Elementary inorganic chemistry.

5. *Mathematics:*—(*a*). Written Arithmetic.—The subject completed and reviewed.

(*b*). Mental Arithmetic.—The subject completed.

(*c*). Algebra.—Quadratics completed, indices and surds, the roots of equations, indeterminate equations, introduction to the binominal theorem.

(*d*). Geometry.—Euclid, Books III. and IV., with deductions.

(*e*). Mensuration.—Volumes of solids.

(*f*). Trigonometry.—To the end of the area of triangles.

(*g*). Natural Philosophy.—Peck's Ganot; Statics.

6. *Classics:*—(*b*). Latin.—Latin prose composition continued. Cæsar, *De Bello Gallico*, Book II., Vergil, *Aeneid*, Book I.

CLASS "A."

1. *English Language and Literature.*—Extension of the course for class "B." Critical reading of an English classic. History of English literature and rhetoric completed.

2. *History:*—(*a*).—British History.—Critical study of the remaining portion.

(*b*). Ancient History completed.

3. *Science.*—Inorganic chemistry completed.

4. *Mathematics:*—(*a*). Algebra.—The subject completed and reviewed.

(*b*). Geometry.—Definitions of Book V., Book VI., with deductions.

(*c*). Mensuration.—The subject completed and reviewed.

(*d*). Trigonometry.—The subject completed and reviewed.

(*e*). Natural Philosophy.—Peck's Ganot completed, Dynamics and Hydrostatics.

5. *Classics:*—(*a*). Latin.—Latin prose composition continued, Vergil, *Aeneid*, Book II., Horace, *Odes*, Books I. and III.

(*b*). Greek.—Greek prose composition continued, Xenophon, *Anabasis*, Book II., Homer, *Iliad*, Books I. and II.

NOTE.—1. The courses given in classes "C," "B" and "A" are partially adapted to candidates for Third, Second and First Class Certificates, respectively.

2. The courses given in classes "B" and "A" are also intended to prepare candidates for first and second year college matriculation.

32	Ravey, Martin	Vancouver City
33	Short, William	" "
34	Shook, Francis	" "
35	Southcott, Florence	" "
36	Spillman, Elizabeth	" "
37	Stitt, Anna	" "
38	Taylor, Agnes	" "

*Promoted to Class "A" at Mid-summer Examination.

CLASS "C."

39	†Agnew, Sara B	Vancouver City
40	Barnes, Lena	" "
41	Barton, Annie	" "
42	Blair, Mabel A	" "
43	†Brown, Bessie	" "
44	†Brown, Roy W	" "
45	Currie, Flora M	" "
46	†Dodd, Leonard A	Yale
47	Dougall, Arthur St.G	Vancouver City
48	Eldridge, Julia M	" "
49	Frank, Annie	" "
50	†Fraser, Mary I	" "
51	Fraser, William	" "
52	†Henderson, R. Arthur	Chilliwack
53	Johnson, Jennie A	Vancouver City
54	Johnstone, Jean P	" "
55	†McKinnon, Mary	" "
56	†McQueen, Annie W	" "
57	Mitchell, Jennie L	" "
58	Moss, Laura E	" "
59	†Parker, Edith C	" "
60	Reid, Jemima	" "
61	†Rennison, Winfred G	Comox
62	†Scurry, Albert	Vancouver City
63	Scurry, Harvey	" "
64	Smith, Alice H	Moodyville
65	Whitworth, Gladys	Vancouver City

†Promoted to Class "B" at Mid-summer Examination.

CLASS "D."

66	Breeze, Ethel	Vancouver City
67	Bodwell, Bryant	Lulu Island
68	‡Carter, Ethel	Vancouver City
69	Dixon, Jessie	" "
70	Dixon, Mary	" "
71	Foreman, Alfred	" "
72	Grant, Jane	" "

73	Henderson, May	Hastings
74	Heaps, Katharine	Vancouver City
75	Livingstone, Eliza	Langley, N.W.D.
76	McAlpine, Florence	Vancouver City
77	‡McAlpine, Sara	" "
78	McNutt, Eressa	" "
79	‡McNair, Laura	" "
80	‡Macgowan, Roy	" "
81	‡Murray, Whitley	" "
82	Miles, Katharine	" "
83	‡Moors, Norman	" "
84	‡Nicholson, Malcolm	" "
85	‡Oppenheimer, Reua	" "
86	‡Ogilvie, Ethel	" "
87	‡Robinson, Miriam	" "
88	‡Urquhart, Alice	" "
89	‡Whitlaw, Lawreuce	Victoria
90	‡Wood, Alma	Vancouver City

‡Promoted to Class "C" at Mid-summer Examination.

CLASS "E"

91	Alcock, Ada	North Arm
92	Austin, Cassie	New Westminster
93	§Allan, Alexander	Vancouver City
94	Armstrong, Mabel	" "
95	§Bovyer, Wesley	" "
96	§Breeze, Willie	" "
97	§Burnett, Minnie	" "
98	Cassady, May	" "
99	Charleson, Gertrude	" "
100	Clarke, William	" "
101	Daniels, Jennie	North Arm
102	Fraser, Clifford	Vancouver City
103	Fox, Ethel	" "
104	Fowler, Hector	" "
105	§George, Mary	" "
106	§Godfrey, Fred	" "
107	Garrison, Lydia	" "
108	Gibb, Agnes	" "
109	§Hooper, Lily	" "
110	Janes, William	" "
111	§Jones, John	" "
112	Marsden, Lily	" "
113	Marshall, Ida	" "
114	§Mather, Thomas	" "
115	Matheson, Alexander	" "

116	Matheson, George	Vancouver City
117	§Melhuish, Nellie	Chilliwack
118	§Morris, Ethel	Vancouver City
119	Moss, Mena	" "
120	§McLaren, David	" "
121	§McLaren, Archie	" "
122	McAlpine, Olga	" "
123	McRae, Margaret	Nanaimo
124	§McLeod, Etta	Vancouver City
125	McLean, Margaret	" "
126	Olmstead, Hattie	" "
127	Reveley, Charles	" "
128	§Robinson, Esther	" "
129	Shannon, Thomas	Lulu Island
130	§Springer, Frank	Vancouver City
131	§Stark, Ernest	" "
132	Stitt, Freda	" "
133	Stitt, Eleanor	" "
134	Smith, Kate	Lulu Island
135	Sexsmith, Frank	" "
136	Turner, Bertha	Vancouver City
137	Tierney, Martha	" "
138	§Telford, Robert	" "
139	§Wilson, Hugh	" "
140	§Wilson, Jean	" "
141	§Wood, Chester	" "
142	§Westcott, Edith	" "
143	§Worsnop, Charles	" "
144	Wilkinson, Beatrice	" "

§Promoted to Class "D" at Mid-summer Examination.

TEACHERS' EXAMINATIONS.

The following students of the Vancouver High School were successful in obtaining certificates at the last Teachers' Examination, viz:—

(Names in order of merit.)

FIRST CLASS—GRADE A.

De Pencier, Percy
Moscrop, Susan

FIRST CLASS—GRADE B.

Taylor, Agnes
Skinner, Mary
Howe, Hattie
Bodwell, Charlotte

SECOND CLASS—GRADE A.

Bovyer, George
Carter, Elizabeth
Spillman, Margaret

SECOND CLASS—GRADE B.

Whitelaw, Lawrence
Orrell, Harry
Fraser, James
Smith, Kate Viola
McCallum, Ada
Ravey, Martin
Southcott, Florence
Agnew, Margaret
Stitt, Angeline

THIRD CLASS—GRADE A.

Reid, Jemima
Stitt, Winifred
Livingstone, Eliza

THIRD CLASS—GRADE B.

Brown, William C.
Fraser, William
Johnson, Jennie
Frank, Annie
Cameron, Florence
Bodwell, Louise
Ward, Mary

PROMOTION EXAMINATIONS.

(The Examination Papers of Class "A," which were set by the Education Department, do not appear in this Calendar.)

LATIN.

Examiner . . . . . James C. Shaw, A. M.

CLASS "E."

Time: Three Hours.

1. Write the case-endings of the Abiative singular in the five declensions, marking quantities, and explaining clearly the usage where more than one form occurs in a declension.

2. Decline: *illud nomen, unus deus, idem dies, dulcis domus.*

3. The following words are peculiar in some respect: *humus, genius, senex, arbor, vulgus.*

4. (a) Write the following adjectives in the other degrees of comparison: *plus, melior, veterius, difficilis, prior, noxius.*

(b) Give the Latin for 6, 16, 60, 600; 8th, 18th, 80th, 800th.

5. Decline *quis.* Illustrate the difference in use between *quid* and *quod* (Interrogative).

6. Give English derivatives from *novus, ŏs, ōs, manus, sidus, puer.*

7. Write *all* the second persons singular of *moneo.*

8. What two tenses of *capio* are the same except in the first person singular? What two in the first singular? Does the latter hold good in all the conjugations?

9. Translate:

(a) Pater noster qui es in coelis.

(b) Mi fili! da mihi cor tuum.

(c) There are many fish in the sea, many oxen in the fields.

(d) In winter the fathers will be in town with their sons and daughters.

(e) The one consul was in command of a thousand cavalry, the other of five thousand infantry.

(f) This general survived that great battle.

CLASS "D."

Time: Three Hours.

1. (a) Decline: *alia domus, hoc rete.*
   (b) Compare the adverbs formed from the following adjectives: *acer, bonus, magnus, multus.*

2. Illustrate fully the correct use of *se, ipse, is, qui* (Interrogative).

3. Write *all* the second persons singular of *fero.*

4. (a) Give the "Active forms" and the "Passive meanings" of *vereor.*
   (b) Distinguish the forms *nolis, noles, nolles.*
   (c) Write the Future Imperfect Indicative and the Present Imperfect Subjunctive of *eo.*

5. How are the Perfect tenses of the Latin verb formed? Note modifications.

6. Write the principal parts of the following verbs: *vinco, deleo, gaudeo, recipio, quatio, patior.*

7. (a) State fully the various uses of the Ablative case, mentioning when prepositions are required.
   (b) What prepositions govern both the Ablative and the Accusative? With what difference of meaning?

8. Mention the kinds of expressions with which the following are used: *ne, ut non, quo, quominus, quin, Accusative and Infinitive, Second Supine.*

9. (a) Give English words etymologically related to the following: *ōs, cor, caro, prospicio, detego, taedet.*
   (b) Show that knowledge of this kind assists both in declension and conjugation.

10. Translate into Latin:
   (a) This man died at Rome aged sixty-eight.
   (b) Tell me, my son, who is in town with you this year.
   (c) The one is ashamed of his folly, the other repents of it; I pity both.
   (d) Don't do this, but obey the laws of your country.

CLASS "C."

Time: - - - Three Hours.

I. Translate:

(a) Extremum oppidum Allobrogum est proximumque Helvetiorum finibus Geneva. Ex eo oppido pons ad Helvetios pertinet. Allobrogibus sese vel persuasuros, quod nondum bono animo in populum Romanum viderentur, existimabant, vel vi coacturos, ut per suos fines eos ire paterentur. Omnibus rebus ad profectionem comparatis diem dicunt, qua die ad ripam Rhodani omnes conveniant. Is dies erat a. d. V. Kal. Apr. L. Pisone, A. Gabinio consulibus.

1. Account for the cases of *finibus*, *Allobrogibus*, *animo*, *consulibus*.
2. Write the principal parts of *coacturos* and *paterentur*.
3. Comment on *diem*, *die*, and *dies*.
4. Fill out the abbreviations in the last sentence. Explain the method of computing Roman dates.

(b) His Caesar ita respondit: Eo sibi minus dubitationis dari, quod eas res, quas legati Helvetii commemorassent, memoria teneret, atque eo gravius ferre, quo minus merito populi Romani accidissent: qui si alicuius iniuriae sibi conscius fuisset, non fuisse difficile cavere; sed eo deceptum, quod neque commissum a se intellegeret quare timeret, neque sine causa timendum putaret.

1. Make the changes required in turning the passage "*Eo sibi . . . . . accidissent*" into *Oratio Recta*.
2. Comment on the different uses of *eo* and of *minus* in this extract.
3. Write the principal parts of *accidissent*, *cavere*, *deceptum*, *intellegeret*.

(c) Interim cotidie Caesar Aeduos frumentum, quod essent publice polliciti, flagitare. Nam propter frigora, quod Gallia sub septentrionibus, ut ante dictum est, posita est, non modo frumenta in agris matura non erant, sed ne pabuli quidem satis magna copia suppetebat: eo autem frumento, quod flumine Arare navibus subvexerat, propterea minus uti poterat, quod iter ab Arare Helvetii averterant, a quibus discedere nolebat. Diem ex die ducere Aedui: conferri, comportari, adesse dicere.

1. Write notes on *flagitare* and *septentrionibus*.
2. Account for the cases of *frumento* and *navibus*.
3. Write the principal parts of *suppetebat* and *discedere*.

4. Explain the infinitives in the last sentence.
5. *Arare.*—What is the modern name? Give the ancient and modern names of the other rivers of Gaul.

II. Write (a) the Present Imperfect Indicative of *fero* in both voices; (b) the third person plural Future Imperfect and Perfect Indicative of *eo;* (c) the first person singular Present and Past Imperfect Subjunctive of *volo.*

III. State the various way of indicating a *purpose* in Latin.

IV. Translate into Latin:

(a) By means of his retainers and debtors Orgetorix escaped standing his trial. (b) Word is brought to Caesar that the Helvetians intend to march through the Province. (c) Having made this answer the ambassador set out for Rome. (d) This is very easily done.

CLASS "B."

Time: Three Hours.

I. Translate:

(a) Aedui, cum se suaque ab iis defendere non possent, legatos ad Caesarem mittunt rogatum auxilium: Ita se omni tempore de populo Romano meritos esse, ut paene in conspectu exercitus nostri agri vastari, liberi eorum in servitutem abduci, oppida expugnari non debuerint. Item Allobroges, qui trans Rhodanum vicos possessionesque habebant, fuga se ad Caesarem recipiunt et demonstrant, sibi praeter agri solum nihil esse reliqui. Quibus rebus adductus Caesar non expectandum sibi statuit, dum omnibus fortunis sociorum consumptis in Santones Helvetii pervenirent.

1. *Rogatum auxilium.*—In what other ways might this be expressed?
2. Parse *reliqui.*
3. Mention other meanings and constructions of *ut* and *dum* than those which occur in this extract.

(b) Locutus est pro his Divitiacus Aeduus: Unum se esse ex omni civitate Aeduorum, qui adduci non potuerit, ut iuraret aut liberos suos obsides daret. Ob eam rem se ex civitate profugisse et Romam ad senatum venisse anxilium postulatum, quod solus neque iureiurando neque obsidibus teneretur. Sed peius victoribus Sequanis quam Aeduis victis accidisse, propterea quod Ariovistus, rex Germanorum, in eorum finibus consedisset tertiamque partem agri

Sequani, qui esset optimus totius Galliae, occupavisset et nunc de altera parte tertia Sequanos decedere iuberet, propterea quod paucis mensibus ante Harudum milia hominum xxiv ad eum venissent, quibus locus ac sedes pararentur.

1. *Pro his.*—Who were these?
2. Make the changes required in turning the passage "*Unum se . . . . . daret*" into *Oratio Recta.*
3. Decline *solus.* Write the comparison of *peius.*

(c) Eo de media nocte Caesar, iisdem ducibus usus qui nuntii ab Iccio venerant, Numidas et Cretas sagittarios, et funditores Baleares, subsidio oppidanis mittit: quorum adventu et Remis cum spe defensionis studium propugnandi accessit, et hostibus eadem de causa spes potiundi oppidi discessit. Itaque, paulisper apud oppidum morati, agrosque Remorum depopulatis, omnibus vicis aedificiisque, quos adire poterant, incensis, ad castra Caesaris omnibus copiis contenderunt, et ab milibus passuum minus duobus castra posuerunt.

1. Account for the cases of *ducibus, nuntii, subsidio, milibus, passuum.*
2. Write notes on the geographical names.
3. *Potiundi oppidi.*—What part of the verb is *potiundi?* State clearly the grounds of your answer.
4. Explain *ab* in the last sentence.

II. Write the principal parts of *consuesse, demetiri, paterentur, cavere, cognoscat, petissent, sanxerunt, revellerent.*

III. State the main subjects of the First and Second Books of the *Gallic War.*

IV. Explain the following terms: *Sarcinas, impedimenta, vergobretus, de tertia vigilia, vineas agere, conversa signa bipartito intulerunt, ad conventus agendos.*

V. Give the ordinary and special constructions to express place *where, whither,* and *whence.*

VI. Distinguish *ne* and *ut non; qui* with the Indicative and with the Subjunctive.

VII. Translate into Latin:

(a) Having made these preparations, he hastens with the utmost possible speed into Further Gaul.

(b) The Saône is a river of such extraordinary slowness that it cannot be determined by the eye in which direction it flows.

(c) The conflict raged fiercely from daybreak till far on in the night.

(d) There is no doubt that this man was seventy years old on the tenth of March.

GREEK.

Examiner ..... ALEX. ROBINSON, B.A.

CLASSES "E." and "D."

N.B.—Class "E." will translate A. and B. and answer Part III. Class "D." will take in addition Part IV.

Time: Three Hours.

I.

A. Translate:

(a.) ἡ τῆς δόξης ἐπιθυμία ἐστὶν αἰτία τῆς ἀρετῆς. (b.) Πρωταγόρας καὶ Γοργίας καὶ Ἱππίας σοφισταὶ ἦσαν. (c.) ὁ ἄργυρος βάσανός ἐστι τῶν τοῦ ἀνθρώπου τρόπων. (d.) τῶν θεῶν οἰκητήριόν ἐστιν ὁ Ὄλυμπος. (e.) οἱ Σκύθαι οὔτε βωμοὺς οὔτε νεὼς ἔχουσιν. (f.) ὁ τάφος ἔχει τὰ Εὐριπίδου ὀστᾶ. (g.) ὁ ἄνθρωπος ἦν προδότης τῆς πατρίδος. (h.) χειμῶνος οἱ θῆρες φοβεροί εἰσιν. (i.) ὁ πολίτης θαυμάζει τὰς τοῦ ἀδελφοῦ πράξεις. (j.) Λυκοῦργος, ὁ Δδύαντος παῖς, ἦν βασιλεὺς τῶν Μακεδόνων. (k.) αἱ Γοργόνες θυγατέρες ἦσαν Φόρκυος καὶ Κητοῦς. (l.) ἡ Μανδάνη Ἀστυάγους ἦν θυγάτηρ, τοῦ Μήδων βασιλέως. (m.) τὸ γῆρας βίου χειμών ἐστιν.

1. βάσανος: three other nouns of the same declension and gender.

2. Ὄλυμπος: its situation and height.

3. οἱ Σκύθαι: who were they, and where were they found?

4. Εὐριπίδου: two other great tragic poets of Athens.

5. Name the states of the Peloponnesus.

II.

B. Translate into accentuated Greek:

(a.) The fear-of-God is the strength of the soul. (b.) The disciples of the sophists admire Euripides. (d.) Gold is a test of the character

(b.) 2nd sing. 1st aor. imperative in all voices of: λύω, κρίνω, φυλάττω.

(c.) the *modal* conjugation of: ἐκλέξας, ἐτειχίσθη, ἤγγελκεν.

7. Give the principal parts of the following verbs: ἄγω, ἔχω, ἀποφεύγω, φέρω, ἀποθνήσκω, λαμβάνω, μανθάνω, καίω, πείθω, φαίνω.

8. Write a complete synopsis of λείπω in the Active voice.

CLASS "B."

XENOPHON: ANABASIS, BOOK I.

Time: Three Hours.

I.

A. Translate:

Ὡς μὲν στρατηγήσοντα ἐμὲ ταύτην τὴν στρατηγίαν μηδεὶς ὑμῶν λεγέτω· πολλὰ γὰρ ἐνορῶ δι' ἃ ἐμοὶ τοῦτο οὐ ποιητέον· ὡς δὲ τῷ ἀνδρὶ ὃν ἂν ἕλησθε πείσομαι ᾗ δυνατὸν μάλιστα, ἵνα εἰδῆτε ὅτι καὶ ἄρχεσθαι ἐπίσταμαι ὥς τις καὶ ἄλλος μάλιστα ἀνθρώπων· (16) μετὰ τοῦτον ἄλλος ἀνέστη, ἐπιδεικνὺς μὲν τὴν εὐήθειαν τοῦ τὰ πλοῖα αἰτεῖν κελεύοντος, ὥσπερ πάλιν τὸν στόλον Κύρου ποιουμένου, ἐπιδεικνὺς δὲ ὡς εὔηθες εἴη ἡγεμόνα αἰτεῖν παρὰ τούτου ᾧ λυμαινόμεθα τὴν πρᾶξιν. εἰ δὲ καὶ τῷ ἡγεμόνι πιστεύσομεν ὃν ἂν Κῦρος δῷ, τί κωλύει καὶ τὰ ἄκρα ἡμῖν κελεύειν Κῦρον προκαταλαβεῖν; (17) ἐγὼ γὰρ ὀκνοίην μὲν ἂν εἰς τὰ πλοῖα ἐμβαίνειν ἃ ἡμῖν δοίη, μὴ ἡμᾶς ταῖς τριήρεσι καταδύσῃ, φοβοίμην δ' ἂν τῷ ἡγεμόνι ᾧ δοίη ἕπεσθαι, μὴ ἡμᾶς ἀγάγῃ ὅθεν οὐκ ἔσται ἐξελθεῖν· βουλοίμην δ' ἂν ἄκοντος ἀπιὼν Κύρου λαθεῖν αὐτὸν ἀπελθών· ὃ οὐ δυνατόν ἐστιν.

1. (a.) λεγέτω takes different construction with it in the extract.
   (b.) Note the change in the form of expression in Sec. 16.

2. Account for the cases of the following words and write their nom. and gen. in full in sing. and plural:
   ἐμοὶ, ἀνδρὶ, ᾧ, τριήρεσι, ἄκοντος.

3. Parse, giving chief parts:
   ἕλησθε, πείσομαι, εἰδῆτε, ὀκνοίην, λαθεῖν.

4. In what different ways does Xenophon express—
   "a river that is a *plethron* in width"?

5. A map showing the route taken by Cyrus.

II.

B. Translate and write a note on each of the following:

(a.) ἐνταῦθα Ξέρξης, ὅτε ἐκ τῆς Ἑλλάδος ἡττηθεὶς τῇ μάχῃ ἀπεχώρει, λέγεται οἰκοδομῆσαι ταῦτα τὰ βασίλεια.

(b.) ὁ δὲ σίγλος δύναται ἑπτὰ ὀβολοὺς καὶ ἡμιωβόλιον Ἀττικούς.

(c.) ἄλλο δὲ στράτευμα αὐτῷ συνελέγετο ἐν Χερρονήσῳ τῇ καταντιπέρας Ἀβύδου τόνδε τὸν τρόπον.

(d.) Ἀρίστιππος αἰτεῖ αὐτὸν εἰς δισχίλιους ξένους καὶ τριῶν μηνῶν μισθόν.

1. Write the Greek and Latin equivalents of the following phrases:

"on the following day," "at break of day," "at sunset."

2. Different measures of length are mentioned in the First Book; give their relative lengths and their equivalents in English measure.

3. Name in order the countries through which Cyrus passed.

III.

1. Decline (a.) in the singular: βασιλεύς, ναύς.
   (b.) in the plural: φύλαξ, πόλις.

2. Form 1st sing. imperf. indic. (contracted forms) of οἰκέω. αἰτιάομαι, διαβαίνω, περιμένω, συλλαμβάνομαι, ἀπαγγέλλω, καθεύδω.

3. Write the 1 aor. infinitive in all voices of: ποιέω, λείπω, στέλλω, ἵστημι.

4. Give the perf. indic. passive in all persons and numbers of: γράφω, φαίνω.

5. Write the modal conjugations of:
   (a.) aor. act. of: δίδωμι.
   (b.) perf. pass. of: στρέφω.
   (c.) 1 aor. pass. of: λύω.

C. Translate into Greek: The great King remained there three days.—The soldiers fear their general.—Children, love your parents.—The citizens admire the two poets.—The Grecian army crossed the river and encamped in a fine park full of trees and various animals.—Cyrus promised to give each soldier a daric and a half instead of a daric per month.

MATHEMATICS.

GEOMETRY.

Examiner.....GEO. E. ROBINSON, B.A.

CLASS "E."

Time.....$2\frac{1}{2}$ Hours.

1. What is a triangle? Why so called? What other name might it bear with equal propriety? Distinguish the different kinds of triangles (a) with reference to their *angles*, (b) with reference to their *sides*.

2. Define: *right angle, hypotenuse, perimeter, radius.*

3. Name the problems in I. 1—20, also the theorems which prove two triangles equal in all respects. Enunciate two propositions which are the *converse* of one another.

4. State and prove I. 4.

5. Bisect a given finite straight line. What do you understand by the terms *bisect, finite?* Does your knowledge of Latin assist you here? Write out the proposition.

6. If two straight lines cut one another, the vertically opposite angles are equal.

7. Any two sides of a triangle are together greater than the third side. Prove this, if you can, by bisecting an angle.

8. Any side of a triangle is greater than the difference between the other two sides.

9. When are angles said to be *complementary?*—when *supplementary?* The bisectors of the adjacent angles which one straight line makes with another contain a right angle.

CLASS "D."

Time.....$2\frac{1}{2}$ Hours.

1. Give a definition of the term *angle.* Explain the following terms used in connection with it: *vertex, arms, adjacent, vertically opposite, right, obtuse, acute, reflex, alternate, complementary.*

2. At a given point *in a given straight line* make an angle equal to a given angle. What is the significance of the phrase in italics? In what propositions of the First Book of Euclid is this problem employed?

3. The complements, etc. Complete the enunciation and prove the proposition.

4. Draw carefully the diagram of I.44. pointing out the parallelogram which it is your object to construct.

5. Triangles upon equal bases and between the same parallels are equal. What is the *hypothesis* of this proposition? What the *conclusion*? There are *two* converse propositions. Why? Enunciate both and prove one of them.

6. If the square on one side of a triangle be equal to the sum of the squares on the other two sides, the angle contained by these two sides is a right angle.

7. Describe a triangle which shall be equal to a given parallelogram and have one of its angles equal to a given angle.

8. The straight line joining the middle points of two sides of a triangle is parallel to the base and equal to half of it.

9. Trisect a right angle.

CLASS "C."

Time.....$2\frac{1}{2}$ Hours.

1. Bisect a triangle by a straight line drawn from a given point in one of the sides.

2. Write the particular enunciation and construction of I. 44.

3. The perpendiculars to the three sides of a triangle drawn from the middle points of the sides meet in a point.

4. Prove diagrammatically that if a straight line be divided into two equal and also into two unequal parts the rectangle contained by the unequal parts together with the square on the line between the points of section is equal to the square on half the line.

5. Enunciate II. 7, and prove the proposition by the *line method*.

6. Define *mean distance*. Using this term, include II. 5 & 6 in one enunciation; also, II. 9 & 10.

7. Write the algebraic equivalents of II. 3, 4, 6, 7, and 9.

8. Enunciate:

$$b^2 - a^2 = (b + a)\ (b - a)$$
$$(a - b)^2 = a^2 - 2ab + b^2$$
$$(a + b)^2 = (a + b)a + (a + b)b$$

9. Show that the perimeter of an isosceles triangle is less than that of any other equal triangle upon the same base.

CLASS "B."

Time: Three Hours.

1. Enunciate II. 6. and prove the proposition by the *line method.* Write the algebraic equivalent of this proposition showing how you choose your symbols. Convert the expression into a well known formula and give the geometrical statement corresponding to this new form.

2. Propositions 1. and 3 of the Third Book of Euclid may be included in a single enunciation. Show this and prove any one of the three propositions involved.

3. If the opposite angles of a quadrilateral are together equal to two right angles the figure is cyclic.

4. From a given circle cut off a segment which shall contain an angle equal to a given angle.

5. If from a point without a circle a secant and a tangent be drawn, etc. Complete the enunciation and prove the proposition.

6. When is a circle said to be inscribed in a rectilineal figure? Inscribe a circle in a given square.

7. In a right angled triangle if a perpendicular be drawn from the right angle to the hypotenuse, the square on this line is equal to the rectangle contained by the segments of the hypotenuse.

8. If two circles cut each other any two parallel straight lines drawn through the points of section to meet the circumferences are equal.

9. Divide a right angle into five equal parts.

10. The square on the side of an equilateral triangle inscribed in a circle is triple of the square on the side of the regular hexagon inscribed in the same circle.

ALGEBRA.

Examiner.....GEO. E. ROBINSON, B.A.

CLASS "E."

Time .....$2\frac{1}{2}$ Hours.

1. Write the values of: 2^4 and 4^3.

Also of: a^2+b^2, $ab^2c^2-a^3bc$, and $(2a+5b)\ (6b-3c)$ when $a=2$ $b=3$ and $c=4$.

2. Simplify: $b-[b-(a+b)-\left\{b-(b-\overline{a-b})\right\}]$.

3. Add: $7a-3b-5c+9d$, $2b-3c-5d$ and $-4d+15c$; also substract: $2c-4b+2a$ from $8a-5b+7c$.

4. Explain, as clearly as you can, why $-6a$ taken from $10a$ gives for result $16a$.

5. Multiply: $a^3+2a^4-a^2+3-a$ by a^2-a.

6. Divide: x^4-y^4 by $x-y$ and x^4-x^2+2x-1 by x^2+x-1.

7. Write algebraically:
   1. the sum of a and b.
   2. the difference of a and b.
   3. the product of a and b.
   4. the product of the sum and difference of a and b.

   Express in words: $(a+b)^2=a^2+2ab+b^2$.

8. Write out the six formulae. By means of these find the values of:

32^2	$(a+3)^3$
49^2	$(2a-5)^3$
59^2-51^2	$(a+2b+3c)^2$

9. Divide: $x^4-(a^2-b-c)x^2-(b-c)ax+bc$ by x^2-ax+c.

10. In a shillings b pence how many pence? How many square feet in a room x feet long and y feet wide? If x is a certain number, what is the number next above it?

CLASS "D."

Time . . . . . $2\frac{1}{2}$ Hours.

1. Resolve into factors:
   1. $abcn-b^2dn-acdy+bd^2y$
   2. $z^2+13z-140$
   3. $a^2+2bc-b^2-c^2$
   4. y^3-64z^3
   5. $6x^2+19xy-7y^2$

2. Solve:
   (a.) $5x-(3x-7)=4x-(6x-35)$.
   (b.) $6x-\{2(9-4x)-3(5x-7)\}=10x-(4+\overline{16x-35})$.

3. A is twice as old as B and 20 years since he was three times as old. What is B's age?

I have £5 11s. 3d. in sovereigns, shillings and pence. I have twice as many shillings and three times as many pence as I have sovereigns. How many have I of each sort?

4. Write out the eight formulae. By means of the appropriate ones find the values of:

1. $(a+b-c)(a-b+c)$
2. $(a+b-c)^2$
3. $(2a-3b)^3$
4. $(a+2b-3c)^3$

5. Find the H.C.F. of $x^6-6x^4+9x^2-4$ and $x^5+x^5-2x^4+3x^2-x-2$; also of x^3+4x^2-5, x^3-3x+2, and x^3+4x^2-8x+3.

6. What meaning do you attach to $4a$? What to a^4? Write the values of these expressions when $a=5$.

Express in words $\dfrac{a^2+b^2}{2ab}$. Reduce x yards y feet z inches to inches.

7. Divide: (a.) $x^3+y^3+z^3-3xyz$ by $x+y+z$.

(b.) $x^3-(a+b+c)x^2+(ab+ac+bc)x-abc$ by $x^2-(a+b)x+ab$.

8. Reduce to simplest form:

(a.) $\dfrac{x^2-18xy+45y^2}{x^2-8xy-105y^2}$ (b.) $\dfrac{x^4-x^2-2x+2}{2x^3-x-1}$ (c.) $\dfrac{a^2+2ab+b^2-c^2}{a^2+ab-ac}$

CLASS "C."

Time: Three Hours.

1. Write the eight formulae, condensing where you can.

Factor:	Expand:
$a^2-b^2+c^2-d^2-2ac+2bd$	$(x+2y-z^2)^2$
x^6-1	$(3a^2-5a)^3$
$8a^2+14ab-15b^2$	$(a+b-c)^3$
$2x^2-5xy+2y^2-17x+13y+21$	$(a+b)^4$

2. Find the H.C.F. and the L.C.M. of $6x^2-x-2$, $20x^2+16x+3$ and $14x^2+5x-1$.

3. Simplify:

(a) $$\frac{1-\dfrac{2xy}{(x+y)^2}}{1+\dfrac{2xy}{(x-y)^2}} \div \left(\frac{1-\dfrac{y}{x}}{1+\dfrac{y}{x}}\right)^2$$ (b) $$\frac{a^3-39a+70}{a^2+4a-45}$$

4. What is an *identical* equation, an equation of *condition*, the *root* of an equation, *elimination?* Illustrate your answers.

5. Solve:

(a) $2x - \frac{5x-4}{6} = 7 - \frac{1-2x}{5}$ (b) $am - b - \frac{ax}{b} + \frac{x}{m} = 0$

6. A and B shoot by turns at a target. A puts 7 bullets out of 12 into the centre, and B puts in 9 out of 12. Between them they put in 32 bullets. How many shots did each fire?

At what time are the hands of a watch together between 5 and 6?

7. Solve:

(a) $\begin{cases} 2x + 7y = 52 \\ 3x - 5y = 16 \end{cases}$ (b) $\begin{cases} \frac{a}{b+y} = \frac{b}{3a+x} \\ ax + 2by = d \end{cases}$ (c) $\begin{cases} y - x + z = -5 \\ z - y - x = -25 \\ x + y + z = 35 \end{cases}$

Can you solve (a) otherwise? If you can, do so.

8. A number is composed of three digits. The sum of the digits is 21; the sum of the first and second is greater than the third by 3; and if 198 be added to the number the digits will be inverted. Find the number.

9. If $\frac{b}{a}$ be a *proper* fraction show that $\frac{b+c}{a+c}$ is greater than $\frac{b}{a}$, c being a positive quantity.

CLASS "B."

Time.....Three Hours.

1. Find the square root of : $9x^4 - 2x^3 - \frac{161}{9}x^2 + 2x + 9$

and the cube root of : $27x^6 - 54x^5 + 63x^4 - 44x^3 + 21x^2 - 6x + 1$.

2. What is a quadratic equation? Distinguish between a *pure* and an *adfected* quadratic.

$ax^2 + bx + c = o$. Solve this question by *completing the square*, and employ the formula so obtained to determine the roots of:—

(a) $x^2 - 9x + 20 = 0$ (b) $x^2 + \frac{a}{b}x - \frac{2a^2}{b^2} = 0$

3. Solve: (a) $\begin{cases} x - y = 14 \\ x^2 + y^2 = 436 \end{cases}$ (b) $\begin{cases} \dfrac{1}{x} - \dfrac{1}{y} = 3 \\ \dfrac{1}{x^2} - \dfrac{1}{y^2} = 21 \end{cases}$ (c) $\begin{cases} x^3 - y^3 = 37 \\ x^2 + xy + y^2 = 37 \end{cases}$

4. In how many ways may 100 be divided into two parts one of which shall be a multiple of 7 and the other of 9?

5. If $a^m \times a^n = a^{m+n}$ for all values of m and n, what meaning must we attach to a^0, a^{-r} and $a^{\frac{p}{q}}$?

Express with root symbols and positive indices:—

$$2x^{\frac{3}{2}} + 3x^{\frac{1}{2}}y^{\frac{3}{2}} - \frac{x^{-\frac{3}{2}}}{3y^{-\frac{1}{2}}}$$

6. (1) Multiply $a^{10} + b^n + c^r$ by $a^m - b^n + c^r$.

(2) Form the square of $y^{\frac{1}{2}} - 2y^{\frac{1}{4}} + 3$.

(3) Divide $m^3 + n^{-3}$ by $m + n^{-1}$

(4) Simplify $\left(\dfrac{y^{p+q}}{y^q}\right)^p \div \left(\dfrac{y^q}{y^{q-p}}\right)^{p-q}$

7. Arrange in order of magnitude: $2^3\sqrt{3}$, $3\sqrt{2}$, $\dfrac{5}{2}\sqrt[4]{4}$

Expand $(\sqrt[3]{m^2} + \sqrt{y^3})^3$, multiply $\sqrt{3} - 2\sqrt{-2}$ by $\sqrt{3} + 2\sqrt{-2}$.

8. Extract the square root of $20 - 8\sqrt{6}$, not by the *method of inspection*, but explain this method and apply it to find the square root of $14 + 6\sqrt{5}$.

9. Solve: (a) $\sqrt{4+y} + \sqrt{y} = 3$

(b) $y^2 - 3y - 6\sqrt{y^2 - 3y - 3} + 2 = 0$

(c) $y^3 - 3y^2 - 10y + 24 = 0$

10. If α, β be the roots of the equation $ax^2 + bx + c = 0$, prove that

$$\alpha^2 + \beta^2 = \frac{b^2 - 2ac}{a^2}$$

TRIGONOMETRY.

CLASS "B."

Time: Three Hours.

1. What do you understand by sine A?

Prove $\sin A = \frac{1}{\text{Cosec } A}$, $\tan A = \frac{\sin A}{\cos A}$ and $\sec A = \sqrt{1 + \tan^2 A}$.

2. Write in tabular form the functions of 15°, 30°, 45°, 60° and 75°. Show how those of 30° and 15° are obtained.

3. $\text{Tan } \frac{A}{2} = \frac{\sin A}{1 + \cos A}$: prove this, and from it deduce

$$\cos A = 2 \cos^2 \frac{A}{2} - 1.$$

Give the companion formulae expressing sin A, tan A and cot A in terms of functions of the half angle.

4. Prove that in an acute-angled triangle $\sin A : \sin B : \sin C = a : b : c$.

Show how to find the height of an inaccessible object on a horizontal plane, when it is inconvenient to measure a base line directly towards the object.

5. Find A from $\tan^2 A - 4 \tan A + 1 = 0$.

Show that $\frac{\text{cosec } A}{\sec A} + \frac{\sec A}{\text{cosec } A} = \sec A \text{ cosec } A$.

6. Find the logarithm of 128 to the base 16.

The decimal part of the logarithm of 5231 is 7185847 : find log. $\sqrt[3]{(.0005231)}$.

7. Convert $\sec A = \frac{1}{\cos A}$ into an equation in L sec A and L cos A, and find L sec 28° 16′ 40″ having given that

L cos 28° 17′ = 9.9447862
L cos 28° 16′ = 9.9448541.

8. Find an expression for the area of a triangle in terms of two sides and the contained angle.

If B = 60°, C = 45° and a = 10 feet, find the area of the triangle.

9. What distance in space is travelled in an hour in consequence of the earth's rotation by a person situated in latitude 60°? (Earth's radius = 4,000 miles.)

MENTAL ARITHMETIC.

Examiner ..... John H. Kerr, B. A.

CLASS "E"

1. Add together all the odd numbers from 13 to 27 inclusive.

2. Find the square of 801.

3. What $^{o}/_{o}$ of a number is $\frac{2}{3}$ of $\frac{5}{6}$ of it?

4. A gain of 25$^{o}/_{o}$ on cost is what $^{o}/_{o}$ of the selling price.

5. By selling tea at 48 cents a ℔. I make a profit of $33\frac{1}{3}$$^{o}/_{o}$; find the cost.

6. If $\frac{3}{7}$ of a mine cost $1,200; find the value of $\frac{4}{5}$ of $\frac{5}{6}$ of it.

7. At what rate will a sum of money treble itself in 15 years?

8. Fihd the simple interest on $150 for 2 years and $5\frac{1}{2}$ months at 6$^{o}/_{o}$.

CLASS "D."

1. Find the cost of 19 articles at $37\frac{1}{2}$ cents each.

2. A man owns $\frac{3}{8}$ of a ship and sells $\frac{2}{3}$ of his share for $1,275; find the value at same rate of another man's share who owns $\frac{8}{15}$ of it.

3. A can do a work in 3 days; B can do it in 4 days, and C in five days. In what time can the three do it together?

4. In a drove of 120 animals there are 50 cows and the rest are horses. How many horses must be sold that there may be left 4 horses for every 5 cows?

5. At 17 mills on the dollar find the tax on $1,500.

6. By selling coffee at 30 cents a ℔. there is a loss of 20%; what selling price would have gained 20%?

7. The interest is $150; the discount is $120; find the sum.

8. How much stock at 92 can be bought for $2,760?

CLASS "C."

1. $\frac{7}{8}$ of 64 is $\frac{8}{7}$ of how many times $\frac{3}{8}$ of 32?

2. Find the cost of 45 articles at $3.24 each.

3. A boy sold 2 dozen oranges; $\frac{2}{3}$ of his gain on 12 was his selling price for 4; what fraction of the selling price was the cost?

4. An agent received $117 for selling 800 bbls. of flour at $6.50 a bbl. What was his rate of commission?

5. Find the income derived from investing \$3,360 in $3\frac{1}{2}$% stock at 96.

6. The discount on a sum of money for 2 years is $\$2\frac{8}{11}$ and the interest for the same time and rate is \$3; find the sum and rate.

7. A merchant invested \$1,096 in cloth; he marked it at an advance of 20%, but finally took 20% less than the marked price; find his entire loss.

8. A boy spent $\frac{2}{5}$ of his money and then found that \$15 was $\frac{5}{8}$ of what he had left. How much had he at first?

CLASS "B."

1. How many hours were there in the year 1800?

2. A merchant sells $\frac{3}{4}$ of an article for $\frac{7}{8}$ of its cost. What is his gain %?

3. How much water must be mixed with 80 gallons of wine at 75c. to reduce the price to 50 cents a gallon?

4. Divide \$4.09 between two boys so that one will receive 40 cents more than twice what the other receives.

5. The interest is \$2 and the difference between the interest and discount is $16\frac{2}{3}$ cents; find the principal.

6. I invested a certain sum in 5% stock at 80, and an equal sum in 8% stock at 120; the difference in the two incomes was \$12; what sum was invested in each?

7. If an article had cost 20% less the gain would have been 30% more; what was the gain %?

8. A merchant sells 35 inches for a yard at an advance of $\frac{1}{3}$ on cost; find his gain %.

WRITTEN ARITHMETIC.

Examiner.....JOHN H. KERR, B. A.

CLASS "E."

1. Simplify $1\frac{1}{11} - \dfrac{1-\frac{7}{22}}{2-\frac{1}{3}} + \dfrac{1\frac{2}{5}}{3\frac{1}{2}} - \dfrac{5\frac{5}{8}}{6\frac{1}{4}}$ of $\left(\frac{1}{5} - \dfrac{\frac{1}{2} - \frac{1}{3}}{4\frac{3}{4} - 3\frac{2}{9}}\right)$

2. On a railway there are 30 telegraph posts to the mile; if a train passes 17 of these in a minute, at what rate per hour is it travelling?

3. The circumference of the large and small wheels of a bicycle are 176 inches and 48 inches respectively; how many more turns does the small wheel make than the large one in a distance of 15 miles?

4. Express in pounds avoirdupois the weight of a mass of gold which weighs $18\frac{2}{3}$ lbs. Troy.

5. A, B and C working together can do a work in 6 days; A could do it alone in 24 days. After working together for 2 days, A is taken ill; how long will B and C take to finish it?

6. Two clocks are set at 2 p. m. on Christmas day; one loses 8 seconds and the other gains 7 seconds in 24 hours; when will one be half an hour before the other, and what time will each clock then show?

7. Between 3 and 4, at what times are the hands of a clock at right angles and 7 minute spaces apart respectively?

8. Extract the cubic root of 428661064.

9. A sum of money has doubled itself in 16 years at simple interest. What is the rate %?

10. The interest on a certain sum for 9 months at 5% is $150 less than the interest on the same sum for 15 months at 4%. Find the sum.

CLASS "D."

1. A merchant who clears 15% annually on his investment is forced to give up business and to loan his money at $6\frac{1}{2}$%. His income is thus reduced $2,550. Find his investment.

2. The interest on a certain sum of money for 9 months at 5% is $150 less than the interest on the same sum for 15 months at 4%. Find the sum.

3. The interest of a certain sum is $36. The discount is $32. Find the sum.

4. What is the value of my property if I pay 648.12\frac{1}{2}$ taxes at $15\frac{1}{4}$ mills on the dollar, and am assessed at $\frac{5}{7}$ of the real value?

5. How much must I invest in 4% stock at 84 to secure a net income of $1,127 after paying an income tax of 2%.

6. Find the amount at compound interest of $4,000 for $2\frac{1}{2}$ years at 8%.

7. Sold cotton on a commission of 4%, invested the net proceeds in sugar at $1\frac{1}{2}$% commission; the total commission was $220. Find the value of the cotton.

8. A man owes a debt of $2,400 due in 6 months. He pays $\frac{1}{3}$ of it in 3 months, $\frac{1}{4}$ of it in 5 months; when does the remainder become due?

9. Two men or 5 boys can do a piece of work in 7 days. How many men would do it in $3\frac{1}{3}$ days?

10. The owner of $\frac{3}{11}$ of a mine sold $\frac{9}{10}$ of his share for $40,500. What should he who owns $\frac{3}{5}$ of the mine get for $\frac{5}{9}$ of his share?

CLASS "C."

1. A man borrowed money for two years. For the first year he paid 5% per cent, and for the second year 6%. At the end of the time he paid back $166. How much was borrowed?

2. The compound interest on a certain sum for 2 years and 73 days at 5% per annum is $82.82. Find the sum.

3. The interest is $\frac{1}{5}$ of the principal. The difference between the interest and the principal is $120. Find the present worth.

4. What fraction of the face value of a note does one receive from a bank which discounts it at 6%, 90 days before it is due?

5. What may I pay for National Bank stock which pays a dividend of 10% so as to realize $7\frac{1}{2}$% on my investment?

6. A man buys an article and sells it so as to gain $12\frac{1}{2}$%. If he had bought it at 10% less and sold it for $18 less he would have gained $20. Find the cost of the article.

7. If the property of a city is valued at $21,000,000 and a man who owns property assessed at $7,000 pays $120 taxes, what is the total tax levied?

8. Sold flour on a commission of $\frac{1}{2}$%; with the net proceeds bought tea on a commission of $\frac{1}{3}$%; the total commission was $50. Find the cost of tea, and of flour.

9. A boy paid 20 cents for 200 apples and pears together buying 25 apples for a cent and 25 pears for 3 cents. How many of each did he buy?

10. Find the cost of papering a room 36 feet long, 24 feet wide, 18 feet high, with paper 18 inches wide at $18\frac{3}{4}$ cents a yard, allowing 64 square yards for doors and windows.

CLASS "B."

1. A merchant sold 384 bbls. of flour, part at $7.25 and the rest at $5.50 a bbl. He received for the whole $42, more than if he had sold all for $6.37½ a bbl. How many bbls. were sold at each price?

2. I have 6½ hours at my disposal. How far may I drive at 8 miles an hour that by walking back at 3⅕ miles an hour I may have 22½ minutes to rest?

3. If stock bought at 10% discount pays 5% on the investment, at what price should the same stock be bought to pay 6%?

4. What is the amount of a note due in 8 months, if the difference between the true and the bank discount is 9 shillings?

5. At what rate % compound interest would a sum of money in 2 years amount to the same as at 3½% simple interest?

6. A town borrows $12,000 to be repaid, principal and interest, in 4 equal annual payments; find the annual payment, money being worth 6% per annum.

7. Bought merchandise as follows: June 1st, $400 on 30 days; June 10th, $850 on 40 days; July 3rd, $12,000 on 30 days. Find equated time.

8. A man built a house, costing $2,500, upon a lot worth $500; the house was burned and the insurance company paid the full amount of the policy, ⅗ of the value at $\frac{30}{5}$%; the land was then sold for $750. What was the man's total gain or loss?

9. Between 6 and 7 when are the hands of a clock equally distant from the figure VI?

10. The par of exchange between London and New York is $4.866564 for £1, and between London and Amsterdam 12.1071 florins for £1. Find the par of exchange between New York and Amsterdam.

BOOK-KEEPING.

Examiner ..... JOHN H. KERR, B. A.

CLASS "E."

1. What are the objects of Bookkeeping.

2. What Books are used in single entry. Explain the use of each.

3. Write three kinds of promissory notes.

4. Write a receipted Bill of 4 articles.

5. Write a receipt for money for rent of house.

6. Enter in day book—

Feb. 1. 1893. Invested in business cash $1000. mdse. $2500
" 2. Bought of Wilson Bros., 124 yds. satin at $1 50.
" " Sold to W. Jones, 120 doz. hose at $2.50.
" 3. Sold to J. Burrows 18 hats at $2.25.
" " Bought of H. Johnson 12 coats at $7.50.
" 4. Sold P. Henderson 6 hats at $3.00.
" " Sold W. Jones for cash, 3 coats at $10.00.
" 6. Bought of Wilson Bros 80 yds. calico at 14c.
" 7. Sold to J. Burrows 14 dozen gloves at $3.
" " Sold to J. Williams 16 yds. merino at $1.20.
" 8. Received from J. Burrows cash to balance a/c, etc.
" " Paid for rent of store, cash $25.
Mdse. on hand $2462.50

7. Post the above, close, and make statement of gains or Losses.

8. What is meant by: Bills receivable, stock, Bought on a/c, Inventory?

CLASS "D."

1. Explain: Stock, Bills Payable, Inventory, cheque, mortgage.

2. Write a receipt for rent due on mortgage.

3. Journalize:

Oct. 1. 1886. Commenced business, investing cash $2000, Goods $600. J. Smith owes on account $40.
" 2. Sold L. Mason on his note at 20 days 34 bush. wheat at 75c. Paid cash for fuel $10.
Bought of C. Wilson, on a/c, goods $600.
" 4. Sold J. Jamieson, on a/c, 140 bush. barley at 50c.
" 5. Paid cash for stationery $1.50.
" 6. Gave C. Wilson my note at 30 days in full of a/c.
" 7. Sold H. Smith on his note 100 bush. wheat at 70c.; 260 bush. barley at 50c.
" 9. Paid cash for coal oil $10, and for lamps $2.50.
" 11. Received from J. Jamieson, on a/c, cash $30, and his note at one month for balance.
" 12. Withdrew from the business, cash $100.
" 13. Sold H. W. Peters, for cash, 100 bush. wheat at 75c.
" 14. Paid clrek's salary with cash $20.

Oct. 16. Bought of H. Martin 80 bush. barley at 50c. Gave in payment J. Jamieson's note.
" 18. Received from J. Smith, on a/c, an order on A. Baker $10.
" 20. Sold M. Mullen on his note at 3 mos. 80 bush. barley at 55c.
" 23. Prepaid by note in favor of C. Wilson with cash. Discount off $1.50.
" 25. Received cash in payment of L. Mason's note.
" 27. Received from J. Smith on a/c, cash $20.
" 30. Paid clerk's salary with cash $20.
Goods on hand $891.50.
Coal oil on hand $6.50.

4. Post the above, close and make out trial balance.

Write the order of Oct. 18.

CLASS "C."

1. Explain: Bookkeeping, Consignment, Goodwill, Mortgage, Draft.

2. Write a Draft. Give the names of the several parties to it. Also give the three journal entries.

3. How are the following Ledger accounts closed: Mdse., Expense, Loss and Gain, Stock?

4. What is meant by the Second Trial Balance? Show clearly why it should balance.

5. Show the advantages that Double Entry has over Single Entry Bookkeeping.

6. Journalize:

(a) Bought goods from A and gave in payment B's note.
(b) Sold goods to B, receiving in payment his cheque.
(c) Gave cheque to C on account.
(d) Paid our note in favor of D, before due, in cash, interest allowed.
(e) Received from G goods to be sold on his account, invoiced $500. Paid freight on same by cheque $40.
(f) Paid Jones' sight draft in cash.
(g) Renewed my note in favor of J. Pace for $300, for 6 mos. with interest at 6%.

7. Make out a balance sheet from following:

Stock	$	..	$ 5,000	..
Cash	7,159	..	1,415	20
Bills Receivable	4,500	..	1,500	..
Merchandise	8,150	25	12,110	70
Bills Payable	2,500	..	3,000	..
W. North	175	..	.....	..
Real Estate	4,000	..	3,575	..
J. Murphy	1,290	..	490	..
P. Brown	.....	..	500	..
H. Johnson	600	..	1,000	..
Expense	216	65	.....	..

CLASS "B."

1. Explain: Acceptance, Bill of Lading, Contraband Goods, Payee, Salvage.

2. Describe the process of closing the Ledger.

3. Show clearly the use of the Day Book, the Journal, the Profit and Loss account.

4. What do you mean by a Book of Original Entry? How are errors corrected in it?

5 Journalize:

(a) Shipped to Henry & Co. goods to be sold on my account and risk, invoiced $645. Paid freight on same with cash $36 50, and gave my note for insurance $19.25.

(b) Borrowed from the Bank $500 for 2 mos. on my note at 12°/₀ per an.

(c) The goods shipped to Henry & Co. were destroyed by fire.

(d) Received cash for insurance on shipment to Henry & Co. $600.

6. Give Day Book entries corresponding to:—

(a) Mdse. Dr. $1,000.
To Bills payable $600.
To Cash $400.

(b) Loss and Gain Dr. $150.
Cash Dr. $100.
To Bills Receivable $250.

7. Average the following account:

W. SMITH.

April 3	Mdse.	4 mos.	600	May 20	Cash		750
May 15	"	6 "	980	June 5	"		720
June 12	"	4 "	1,020	July 10	"		300

8. Give the Day Book entries corresponding to the above entries of April 4th and May 20th.

ENGLISH GRAMMAR AND COMPOSITION.

Examiner.....J. K. HENRY, B.A.

CLASS "E."

Time: Three Hours.

A.

1. Explain the terms: Etymology, Inflexion, Tense, Adjective, Reflexive. What is the gender of *army?* What number are *eaves* and *mathematics?*

2. Write the feminine of *founder*, *executor*, *author*, *hart*. Write the plural of *no*, *Percy*, *grief*, *A*, *genius*, *solo*. Write the possessive sing. of *William II.*, *James*. Explain the old form "John his book."

3. Show how Adverbs are derived (a) from nouns, (b) from pronouns. What is the difference between "few" and "a few"?

4. Write sentences to illustrate the uses of the interrogative *which* and the relative *whose*. Parse the words in italics in the sentence, "*Give me what you* have in your hand."

5. Write the past indef. tense and the past participle of the following verbs, classifying them as strong or weak, trans. or intrans.: *Wonder*, *think*, *lie*, *lay owe*, *will*, *hang*.

6. Write in both voices all forms of the pres. indef. Subj. of *beat*. Write sentences illustrating the uses of *will*, *willed*, *would*.

7. Analyze: "Thin curling in the morning air,
The wreaths of failing smoke declare,
To embers now the brands decayed,
Where the night-watch their fires had made."

Parse: "Many a morning on the moorland did we hear the copses ring."

B.

1. Expand the passage for analysis into a short prose narrative.

2. What are your aims in writing a composition? How does one learn to write good English?

3. What is Ambiguity? Give rules for preventing Ambiguity.

4. Construct, or quote, a Periodic sentence containing about 25 words. Improve, if necessary, the following sentences:—(a) Not one of these tyrants enjoyed a life of peace or a natural death. (b) It won't rain, I don't think. (c) They returned back again to the same city from whence they came forth.

5. Tell in your own words any story you have read.

CLASS "D."

Time: Three Hours.

A.

1. Write sentences illustrating the various uses of *since*, *worth*, *shall*. Write sentences containing (a) a nominative case after a passive verb, (b) an objective case after a passive verb, (c) an objective case after an intransitive verb.

2. Explain the Derivation of Adverbs.

3. Distinguish between gerunds, participles, and verbal nouns in *-ing*.

4. "The relative pronouns *who*, *which*, and *that*, have a two-fold use." Explain. When is *that* preferred to *who* or *which*?

5. Correct or justify the following: (a) Twice two is four. (b) The assertions of this author are easier detected. (c) I visit all the flowers and blossoms of the field and garden. (d) The sentence of the judge's is not unjust. (e) Now good digestion wait on appetite, and health on both.

6. Analyze: "Marvelled Sir David of the Mount;
Then, learned in story 'gan recount
Such chance had happed of old,
When once, near Norham, there did fight
A spectre fell of fiendish might,
In likeness of a Scottish knight,
With Brian Bulmer bold."

7. Parse: "Perish my name, if aught afford
Its chieftain safety, save his sword."

B.

1. What are the two main constituents of our vocabulary? Name the classes of words belonging to each. Name three prose writers of this century distinguished for large vocabulary.

2. Distinguish between the following synonyms: Flower, bloom; list, catalogue; character, reputation; greatness, magnitude.

3. Define *Barbarism, Slang, Redundancy.* What are your aims in writing a composition?

4. What is figurative language? Show the appropriateness of the metaphor "sea of troubles." Define Synecdoche and give examples Paraphrase, "The more hurry the less speed." What is the figure?

5. Tell in your own words any story you have read.

CLASS "C."

Time: Three Hours.

A.

1. Account for the classical elements in English.

2. Mention some of the anomalies of the English letter system.

3. What number is *alms?* Name other nouns of the same class. Write etymological notes on *children, sempstress, John his book, powerfullest, could, seldom, yes.*

4. Classify the pronouns.

5. Write sentences illustrating the uses of *since, worth, shall.* Write sentences containing (a) a nominative case after a passive verb, (b) an objective case after a passive verb, (c) an objective case after an intransitive verb.

6. Analyze: "There is a stern round tower of other days,
Firm as a fortress with its fence of stone,
Such as an army's baffled strength delays,
Standing with half its battlements alone
And with the two thousand years of ivy grown,
The garland of eternity, where wave
The green leaves over all by time o'erthrown."

Parse: "Perish all such." "Is gone."

B.

1. Convey the full meaning of the following passage in ordinary prose:

"The western waves of ebbing day
Rolled o'er the glen their level way;
Each purple peak, each flinty spire,
Was bathed in floods of living fire.
But not a setting beam could glow
Within the dark ravine below,
Where twined the path, in shadow hid,
Round many a rocky pyramid,
Shooting abruptly from the dell
Its thunder splintered pinnacle."

2. What is style? What is the standard of style? Define slang. Is slang to be altogether condemned?

3. What is Unity in the Sentence? Give rules for preserving Unity.

4. What principles would you keep in view in constructing a paragraph?

5. Improve the following sentences:

(a) Antiquated words and forms were used differently from now.

(b) I am not bound to receive any messenger you send.

(c) If I am not mistaken, the year 1848 will have to be referred back to for several generations to come as an epoch commencing much in European history.

(d) And time has fled fleetly since reluctant my departing steps crossed the threshold of that home whose indulgences and endearments their temporary loss has taught me to value more and more.

Paraphrase: "The more hurry the less speed."

HISTORY AND GEOGRAPHY.

Examiner.....J. K. Henry, B. A.

CLASS "E."

Time: Two and a Half Hours.

A.

1. Derive the words *Britain, France, Pict, Saxon, Chester, Wednesday.*

2. Britain and Gaul were overrun by Teutonic tribes. Name these tribes. Explain how it has come about that modern English is a Teutonic language, while modern French is a Romance language.

3. Narrate the events that led to the Norman Conquest of England.

4. Write full historical notes on four of the following:—Curia Regis, Benevolences, Caxton, Wycliffe, the "King Maker."

5. The life of Richard of Gloucester, afterwards Richard III.

6. "He was unfortunate. He estranged his people not only by his bad, but also by his good government." What King is referred to? Explain the statement.

B.

1. Name, in order of population if possible, the leading cities in the United Kingdom of Great Britain and Ireland. Whence does England derive her wheat supply?

2. Holland, its boundaries, surface, rivers, natural resources, manufactures, and cities.

3. A vessel sails from Marseilles to Amsterdam, calling at Malaga. Through what waters would she pass? What capes would be sighted? What would probably be her cargo?

4. Draw a map either of Italy *or* France, filling in as many details as time will permit.

5. Locate the following cities, mentioning something of note in connection with each:—Palermo, Trieste, Salamanca, Basle, Cracow, Liege, Utrecht, Barcelona. What changes were made in Turkey by the Treaty of Berlin?

CLASS "D."

Time.....2½ Hours.

A.

1. An account of Thomas Cromwell.

2. An account of Mary, Queen of Scots, in England. Express, and support, your opinion of her imprisonment and execution.

3. Write notes on: The Renascence, Sir Walter Raleigh.

4. "For eleven years no parliament was called—a case without parallel in our history." Give the dates, and an account of these years.

5. What constitutional changes were brought about by the Revolution of 1688.

B.

1. Name, in order of population, the 10 largest cities in the British Empire.

2. The Chinese Empire, its natural resources, commerce, and chief cities.

3. Name and locate the British and the French possessions in Asia.

4. A map of *India*. Fill in as many details as time will permit.

5. Locate the following, mentioning something noteworthy in connection with each:—Singapore, Mandalay, Herat, Medina, Mosul, Tarsus, Ararat, Kioto.

6. Name the extreme points of the continent, north, east, south and west. Give boundaries of Afghanistan.

CLASS "C."

Time... .....2½ Hours.

A.

1. Britain and Gaul were overrun by Teutonic tribes. Name these tribes. Explain how it has come about that modern English is a Teutonic language, while modern French is a Romance language.

2. Write full notes on the following: Culdees, Carausius, Athelstan, Were-gild, Slavery in Anglo-Saxon England.

3. What kings ruled in the 13th century? To what does Macaulay compare this century of our history? Why?

4. The reign of Henry II. *or* Richard II.

5. An account of Thomas Cromwell. Compare his policy with Wolsey's.

6. The aims and character of Elizabeth. What makes her reign memorable?

B.

1. What additions have been made to the British Empire within the last 10 years. Name and locate the university towns of Scotland and Germany.

2. A vessel sails from Marseilles to Amsterdam, calling at Malaga. Through what waters would she pass? What capes would be sighted? What would probably be her cargo?

3. Where and what are the following: Odense, Dal, Liege, Malvern, Leven, Save, Galatz, Valetta, Basle, Salamanca, Kiev, Elsinore, Jungfrau.

4. What changes were made in Turkey by the Treaty of Berlin? Name the principal German States.

5. Draw a map either of France or Italy, filling in as many details as time will permit.

STATICS, DYNAMICS, AND PHYSICS.

Examiner.....J. K. Henry, B. A.

CLASS "B."

Time.....Three Hours.

A.

1. Find the resultant of any number of forces acting in a plane at one point: *or*, find the resultant of two parallel forces acting in the same direction on a rigid body.

2. Two strings, at right angles to each other, support a weight of 10 lbs., and one string makes an angle of 30° with the vertical line. Find the tensions of the string.

3. Two men carry a uniform beam 6 feet in length and weighing 224 lbs., at 2 feet from one end a weight of 64 lbs. is placed; what weight does each man sustain, supposing the ends of the beam to rest on their shoulders?

4. The fulcrum of a common steelyard is $1\frac{1}{3}$ inches from the point at which the suspended goods are to be weighed, and 2 inches from the c. g. of the bar, the bar itself weighs 3 lbs., and a 2-lb. weight slides on it. At what distance apart are the graduations marking successive pounds' weight?

5. "Upon it depends the whole theory of hydrostatics."
State the principle referred to.
How may it be illustrated experimentally?
What is the Hydrostatic Paradox?

6. The specific gravity of gold is 19.3 and of copper 8.62; how much gold and how much copper must be taken to form 12 lbs. of an alloy whose specific gravity is 18.41?

B.

1. Define *Dynamics* and *Physics*. Distinguish between (a) *mass* and *weight* (b) *fluid* and *liquid*. State the phenomena observed when liquids of different specific gravities are separated by a porous partition.

2. (a) Write Newton's Second Law of Motion. Explain the law, making important deductions.
   (b) Show how to trace the path of a body thrown horizontally from a height. If its initial horizontal velocity is 100 feet per second, find its position after five seconds.

3. (a) Find the length of a pendulum to beat seconds at a place where g is 32.12.
   (b) How many cubic feet of water will an engine of 100 h. p. raise in one hour from a depth of 150 feet?

4. Carefully describe the wheel form of the Siphon Barometer *or* Explain the action of the Siphon *and* the air-pump

5. Describe the propagation of Sound.
   What is the velocity of Sound in air? in water?
   What are *resonance* and *pitch*?

6. What is a major chord? a minor chord?
   Find the intervals between the notes of the scale.

BOTANY.

Examiner.....J. K. Henry, B. A.

CLASSES "B" and "C."

Time.....$2\frac{1}{2}$ hours.

1. Describe in detail, by drawing and otherwise, all the parts of any local plant.

2. Describe in a word or two the flower *clusters* and the general form of the leaf of any seven of the following: Cornus Canadensis Trientalis, Maianthemum, Elder, Alder, Aruncus, Trifolium repens, Veronica Americana, Oregon grape.

3. Give the characteristics of three of the families—Liliaceae, Saxifragaceae, Orchidaceae, Ericaceae. Name a few plants in each of the three chosen.

4. Describe, referring to particular flowers, various provisions for cross fertilization.

5. Explain the terms—septicidal, silique, placenta, epigynous, emarginate, didynamous, glaucous, circinate, funiculus, imbricate, orthostichies, caducous, pappus, scape.

6. Outline the life history of a fern.

7. Describe an exogenous stem. Give some account of its tissues.

MENSURATION.

Examiner ..... JOHN H. KERR, B. A.

CLASS "B."

1. Show by an example that if a square and a rectangle have equal perimeters, the area of the square exceeds the area of the rectangle by the area of a square, the side of which is half the difference of the sides of the rectangle.

2. The base of a triangular field is 1166 links and the height is 738 links. The field is let for £24 a year. At what price per acre is it let?

3. The area of a rhombus is 354144 square feet; one diagonal 672 feet; find the height.

4. The radius of a circle is 1 foot; a square is inscribed in it; find the area between the circle and the square.

5. A person has a triangular shaped garden whose base is 200 yards; find the length of a hedge parallel to the base which divides it into two equal parts.

6. Prove the rule for finding the area of a trapezoid.

7. The volume of a ring is 100 cubic inches; the length is 20 inches; find the length of the inner diameter.

8. The slant height of a right circular cone is 25 feet and the radius of the base is 7 feet; find the volume.

9. Give the rules for finding the volume of a frustum of a pyramid, of a wedge.

10. If a ball $3\frac{1}{2}$ inches in diameter weigh 6 lbs.; find the diameter of a ball of the same metal that weighs 20 lbs.

CLASS "C."

1. On the sides of a right angled triangle squares are described towards the outside. If the sides that include the right angle are 5 inches and 12 inches, find the outside perimeter and the total space enclosed.

2. What is meant by similar figures? A gas jet is fixed to a wall 11 feet from the floor; how far must a man 6 feet high stand from the wall to cast a shadow 5 feet long?

3. The chord of an arc is 24 feet and the chord of half the arc is 12 feet; find the diameter of the circle.

4. How many boards 14 feet long by 10 inches wide will be required to build a sidewalk 40 rods long and 4 feet 8 inches wide?

5. A rectangular field is $7\frac{1}{2}$ times as long as it is wide and contains 300 acres; what is the distance around it?

6. Prove the rule for finding the area of a parallelogram.

7. Find the surface of a board 25 inches wide at one end and 18 inches at the other end and 16 feet long.

8. The sides of a triangle are 14, 12, and 9 chains respectively. Find its area in sq. yards, also the perpendicular on the longest side from the opposite angle.

9. A B C D E is a five sided figure, and the angles at B, C and D are right angles: if A B = 20 feet, B C = 18 feet, C D = 32 feet and D, E = 13 feet, find the area of the figure and the length of A E.

10. The shorter diagonal of a rhombus is equal in length to a side which is 30 feet; find the height of the rhombus.

CLASS "D."

1. A tree breaks off 12 feet from the ground and remains on the stump with the top on the ground at a distance of 34 feet from the stump. Find the whole length of the tree.

2. At $36 an acre a farm is worth $3060. It is 80 rods wide. Find the cost of fencing it at 75c. a rod.

3. The radius of a circle is 26 inches; the perpendicular drawn from the centre on a chord is 10 inches; find the length of the chord.

4. Which requires the most fence, a circular field containing 1.10448125 ac. or a square field containing 1.225 ac. and how much?

5. State and prove one rule for finding the area of a triangle.

6. The sides of a triangle are 25, 39, and 36 feet respectively; find the areas of the two triangles into which it is divided by the perpendicular on the longest side from the opposite angle.

7. The radius of a circle is 2 feet; find the perimeter of the semicircle.

8. Find the area of a circular walk 2 yards wide, surrounding a circular pond which contains $2\frac{1}{2}$ acres.

9. Find cost of carpeting a room 24 feet by 18 feet with carpet $\frac{2}{3}$ yards wide at $1.20 a yard.

10. Show by an example how to find the area of a trapezoid.

ENGLISH LITERATURE.

Examiner.....JAMES C. SHAW, A. M.

CLASS "C."

Time: Two Hours.

1. Give *Mr. Spectator's* views on Sermons, Witchcraft, Exercise, and Party Politics.

2. Describe Sir Roger de Coverley's household.

3. What traits in Sir Roger's character are brought out in the description of him (a) at church, (b) on the trip to the Assizes, (c) to Vauxhall, (d) during the visit to Westminster Abbey (e) to Moll White, (f) in his will?

4. Define and illustrate the "Addisonian Termination." Mention the main grammatical differences between the prose of Addison and that of the present day.

5. Reproduce Goldsmith's descriptions of the Village Schoolmaster.

6. Discuss the Political Economy of *The Deserted Village.*

7. Give the derivation of *hamlet, nightingale, melancholy, companion, backgammon, pheasant, hassock, atheist, tabby, yeoman, Saracen, Gipsy.*

8. Explain the following:

(a) Half a tillage stints thy smiling plain.

(b) To husband out life's taper at the close.

(c) A Cassandra of the crew.

(d) Stories of a cock and bull.

(e) Some danger in coming home late, in case the Mohocks should be abroad.

9. Name the chief works of Addison and of Goldsmith. How does the latter describe his experience as a poet?

CLASS "B.

Time: Two Hours.

1. Write the following passage in simple prose:

In climes beyond the solar road,
Where shaggy forms o'er ice-built mountains roam,
The Muse has broke the twilight-gloom
To cheer the shiv'ring native's dull abode.
And oft, beneath the od'rous shade
Of Chili's boundless forests laid,
She deigns to hear the savage youth repeat,
In loose numbers wildly sweet,
Their feather-cinctured chiefs, and dusky loves.
Her track, wher'er the Goddess roves,
Glory pursue, and generous Shame,
Th' unconquerable Mind, and Freedom's holy flame.

2. Explain the following passages:

(a) Comes the blind Fury with the abhorred shears,
And slits the thin-spun life.

(b) As Ixion fix'd, the wretch shall feel
The giddy motion of the whirling Mill.

(c) Till the sad Nine, in Greece's evil hour,
Left their Parnassus for the Latian plains.

(d) The Theban Eagle.

(e) Long years of havock urge their destin'd course,
And thro' the kindred squadrons mow their way.

3. Who was the original of Milton's *Lycidas?* What facts respecting him may be gathered from the poem?

4. (a) Describe the Baron's sacrifice in *The Rape of The Lock*. What was its object, and how far was it successful?

(b) Show that this poem "reflects" the poet and the age.

5. What is the "moral" of *The Ancient Mariner?* Discuss the justice of the respective punishments of the Mariner and of his companions.

6. How does Gray describe Milton, Spenser, Edward III, Richard III., Elizabeth?

7. How do you account for the fact that *The Elegy* is so widely known and popular, while *The Progress of Poesy* and *The Bard* are comparatively unknown?

8. "In the scanty amount of what he produced Coleridge reminds one of Gray; but the causes of sterility were different." Account for the "sterility" in each case.

ANCIENT HISTORY.

Examiner.....James C. Shaw, A. M.

CLASS "C."

Time: Two Hours.

1. (a) Who were the Pelasgians?

(b) Relate the legend of the founding of Rome.

(c) Discuss the credibility of the history of the regal period.

2. Describe the attempts to restore Tarquin.

3. State the grievances of the Plebeians and the chief legislation by which they were redressed.

4. What circumstances led to the Great Latin, the Second Punic, and the Social Wars? Name the most important battle and generals in each of them.

5. Describe the reforms attempted by the Gracchi.

6. Sketch the career of Pompey the Great.

7. (a) Give the dates of the Establishment of the Republic, the Deposition of the Decemvirs, the Sack of Rome by the Gauls, the Fall of Carthage, the Assassination of Julius Cæsar.

(b) To what causes was the last mentioned due?

8. Write explanatory notes on the following terms: *Magna Graecia, Rex Sacrorum, Capite Censi, Veto, Publicani, Judices, Novus Homo, the Twelve Tables, the Second Triumvirate.*

CLASS "B."

Time: Two Hours.

1. Tradition ascribes the beginnings of Greek civilization and the foundation of the oldest cities and states of Greece to four foreigners. Name them, and discuss the probable truth of this.

2. Give a description of the elements of union which existed among the Greeks, and state their limitations.

3. Describe the change from monarchy to democracy in the Greek states, with special reference to the history of Attica.

4. What was the underlying principle of the institutions of Sparta? Discuss the merits and demerits of the Spartan system of training.

5. What was the essential difference between the constitution of Theseus and that of Solon? Describe both constitutions in some detail, and also their Roman counterparts. What great constitutional change did Cleisthenes introduce?

6. Mention the functions of the following: *King-Archon, Areopagus, Heliaea, Rex Sacrorum. Censor, Judices.*

7. Gives the dates, causes, and consequences of the Social War.

8. Sketch the various Civil Wars among the Romans.

RHETORIC.

CLASS "B."

Time: Two Hours.

1. (a) What "ends" are served by the use of Figures of Speech?
   (b) Distinguish and illustrate *Metonomy* and *Synecdoche*, *Allegory* and *Fable*, *Tautology* and *Redundancy*, *Wit* and *Humour*.

2. What do you consider the chief merits of style?

3. State clearly the main principles of *Narrative*.

4. "Milton's *Areopagitica* in no shape contributed in any assignable degree to the emancipation of the press." Why?

5. What are the chief characteristics of *Science?* What of *Poetry?* Name and distinguish the several species of the latter. Assign to its class and sub-class each of the following: *The Bard, Rape of The Lock, Lycidas, Comus, Samson Agonistes, Lord Ullin's Daughter.*

6. Define and illustrate the following terms: *Obverse Iteration, Argumentum ad hominem, Assonance.*

7. Discuss the following passages from a rhetorical stand-point:
   (a) To one so gifted with the prodigality of Heaven can we approach in any other attitude than of prostration?
   (b) Hence he considered marriage with a modern political economist as very dangerous.
   (c) Tediousness is the most fatal of all faults.
   (d) Blind mouthes! that scarce themselves know how to hold a sheep-hook.

8. Name the Figures in the following:
   (a) His thoughts rise higher when he does reflect
   Of what the world may from that star expect,
   Which at his birth appeared to let us see
   Day for his sake would with the night agree.
   (b) Oh! had he been content to serve the crown
   With virtues only proper to the gown.
   (c) 'Tis all thy business, business how to shun.
   (d) It perched for vespers nine.
   (e) Italia! by the passion of the pain
   That bent and rent thy chain;
   Beloved, O men's mother, O men's queen,
   Arise, appear, be seen!