

Mā te kaiwhakauru me te kura e whakaoti:

Ingoa: _____

NSN

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Wāhere Kura:

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1

SUPERVISOR'S USE ONLY

**RĀ 1
RĀTŪ**



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

AROMATAWAI AROWHĀNUI

Te Pāngarau me te Tauanga, Kaupae 1, 2019

91027M Te whakahāngai tūāhua taurangi hei whakaoti rapanga

Rātū 17 Mahuru 2019

Whiwhinga: Whā

Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.

KĀORE e whakaaetia ngā tātaimai.

Whakaaturia ngā mahinga KATOA.

Mēnā ka hiahia whārangi atu anō koe mō ō tuhinga, whakamahia te (ngā) whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te tau tūmahi.

Me whakaatu e koe ngā mahinga taurangi i tēnei pepa. Kāore e whakaaturia te whakaaro whaipānga mā te whakamahi anake i ngā tikanga o te “kimikimi ka tiroiro i muri mai” me “te whakautu tika noa iho”, ā, ka herea te taumata mō tērā wāhanga o te tūmahi ki te taumata Paetae. Ka taea anake te whakamahi ngā tikanga o te “kimikimi ka tiroiro i muri mai” me “te whakautu tika noa iho” mō te wā kotahi anake i roto i tēnei pepa, ā, kāore e whakamahia tēnei hei taunakitanga o te whakaoti rapanga.

Me mātua whakaoti i te ākongā tētahi rapanga i te iti rawa kia taea ai te taumata Paetae i tēnei paerewa.

Me tuhi ngā otinga ki te āhua taurangi rūnā rawa.

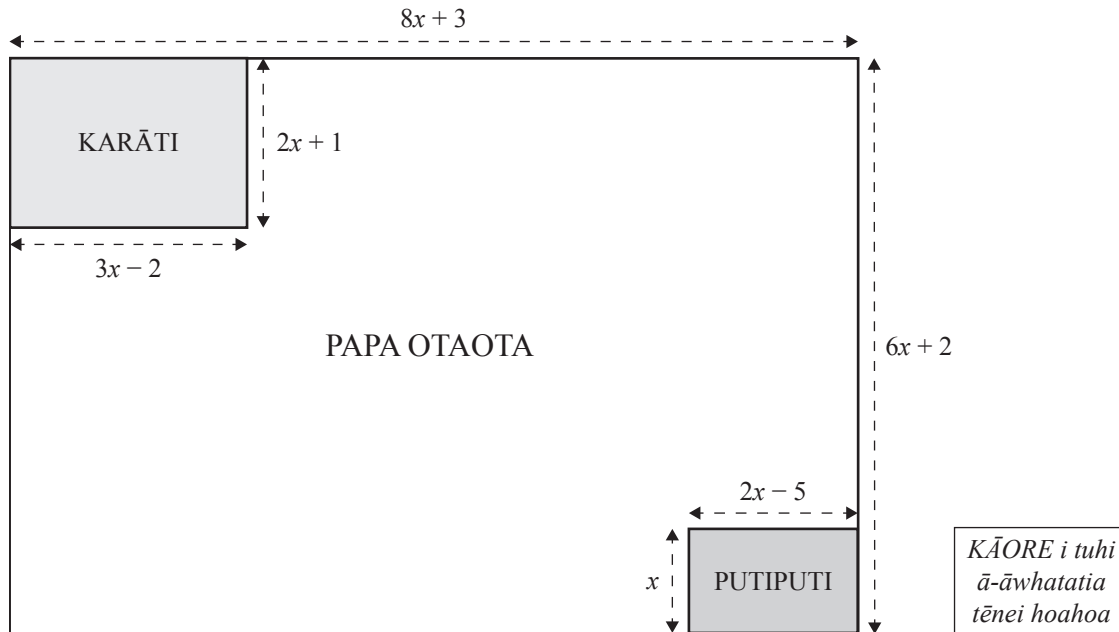
Ina tuhia tētahi tūmahi ki te rerenga kupu, me whakamahi koe i tētahi whārite.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–15 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

ME HOATU RAWA KOE I TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE Ā TE MUTUNGA O TE WHAKAMĀTAUTAU.

MĀ TE KAIMĀKA ANAKE		
Paerua Paetae		
Paetae	Kaiaka	Kairangi
Te whakahāngai tūāhua taurangi hei whakaoti rapanga.	Te whakahāngai tūāhua taurangi mā te whakaaro whaipānga hei whakaoti rapanga.	Te whakahāngai tūāhua taurangi mā te whakaaro waitara hōhonu hei whakaoti rapanga.
Whakakaotanga o te tairanga mahinga <input type="checkbox"/>		

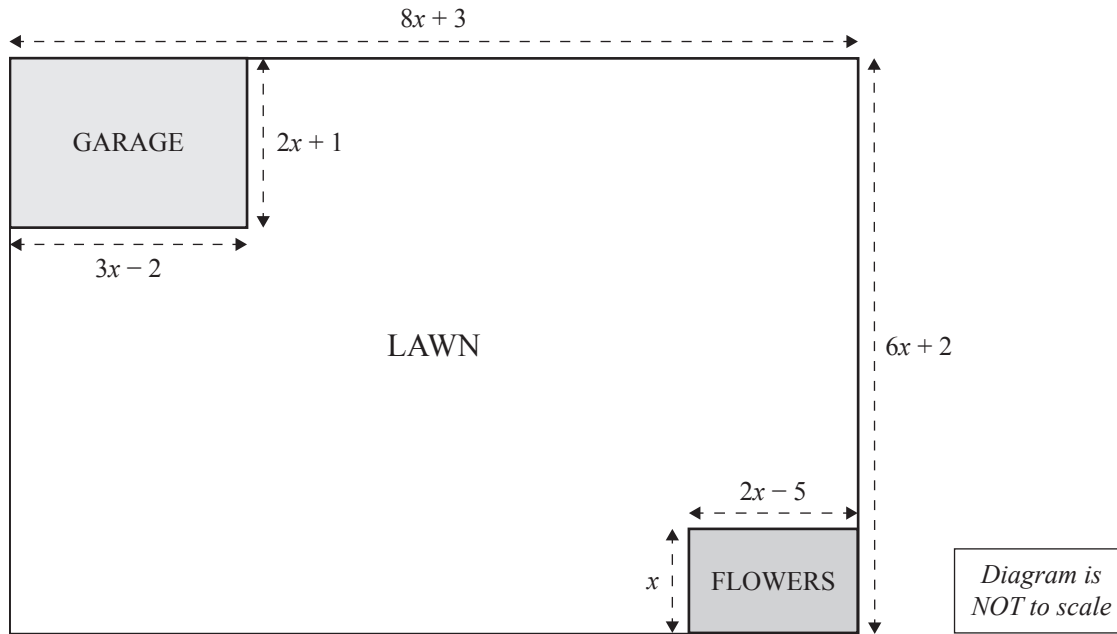
- (d) E whakaaturia ana te mahere o tētahi māra tapawhā hāngai i raro nei.



- (i) Mēnā ko te paenga o te PAPA OTAOTA he 290 mita, whiriwhirihia te uara o x .
Kāore te karāti kauruku, ngā putiputi rānei i roto i te papa otaota.

- (ii) Mēnā ko $L = x^2 + x + 1$, whiriwhirihia he kīanga mō te horahanga o te PAPA OTAOTA, e pā ana ki L .

- (d) The plan of a rectangular garden is shown in the diagram below.



- (i) If the perimeter of the LAWN is 290 metres, then find the value of x .
Note the lawn does not include the shaded garage or flowers.

- (ii) If $L = x^2 + x + 1$, find an expression for the area of the LAWN, in terms of L .

TŪMAHI TUARUA

(a) (i) $w = pq^2 + r$.

Tuhia te whārite mō p e pā ana ki q, r , me w .

(ii) $fk^2 - 9c^2 = 4d^2 + 16gk^2$.

Tuhia te whārite mō k e pā ana ki c, d, f , me g .

(b) Whakarūnāhia, ki tērā e tino taea ana, $\frac{3x^2 + 9x}{x^2 - 9}$.

QUESTION TWO

(a) (i) $w = pq^2 + r.$

Give the equation for p in terms of q , r , and w .

(ii) $fk^2 - 9c^2 = 4d^2 + 16gk^2.$

Give the equation for k in terms of c , d , f , and g .

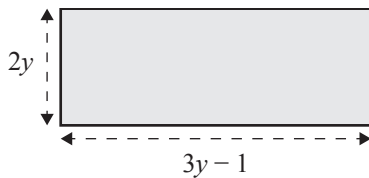
(b) Simplify, as far as possible, $\frac{3x^2 + 9x}{x^2 - 9}.$

- (c) Me tuhi $\frac{8x-1}{4} + \frac{3x-5}{3}$ hei hautau kotahi rūnā.

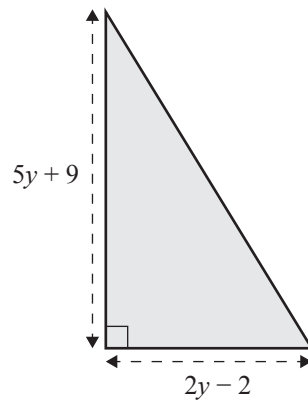
- (d) Whiriwhirihia te uara o y kia ōrite ai te uara o te horahanga o te tapatoru hāngai ki te uara o te tapawhā hāngai, e ai ki raro nei.

Kua tuhia ngā roa katoa ki te cm.

Me mōhio: Ko te Horahanga o tētahi Tapatoru = $\frac{1}{2} \times$ tuapapa \times teitei.



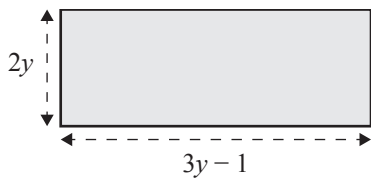
*KĀORE i tuhi
ā-āwhatatia
tēnei hoahoa*



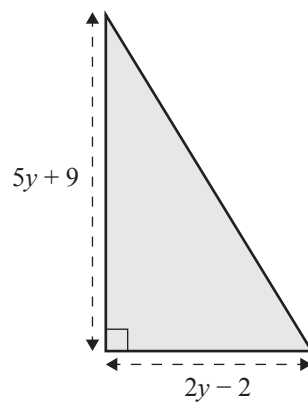
- (c) Write $\frac{8x-1}{4} + \frac{3x-5}{3}$ as a simplified single fraction.

- (d) Find the value of y so that the area of the right-angled triangle has the same value as the area of the rectangle, shown below.

All lengths are in cm. Note: Area of a Triangle = $\frac{1}{2} \times \text{base} \times \text{height}$.



*Diagram is
NOT to scale*



TŪMAHI TUATORU

- (a) Ka tukuna e Mere ētahi tiwhiri kia taea tāna tau muna te tātai.

Ka kī ia, “Ina whakawehea te 20 ki taku tau muna, ā, ka tāpirihia te 7 ki tēnei whakautu, he 2 te otinga.”

He aha te tau muna a Mere?

- (b) Whakaotihia te tōrite $6(5 - 2x) - 4(5 - 3x) > 5(x + 4)$.

- (c) Whakaotihia te whārite $\frac{x+12}{x+4} = \frac{x+4}{x+2}$.

QUESTION THREE

- (a) Mere gives some clues so that her secret number can be calculated.

She says, "When 20 is divided by my secret number and then 7 is added to this answer, this gives a solution of 2."

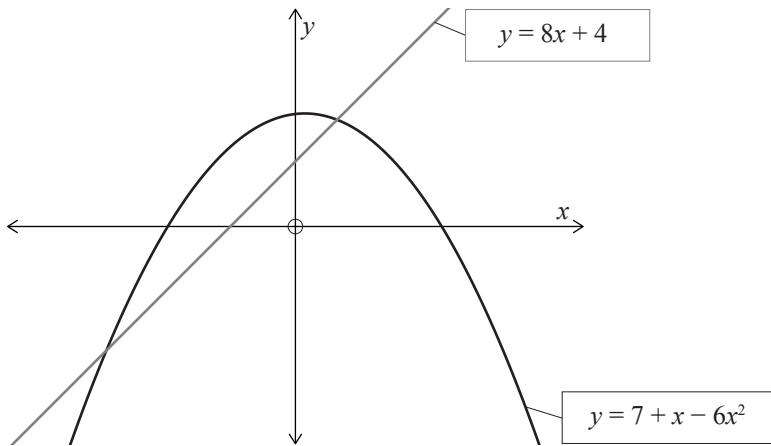
What is Mere's secret number?

- (b) Solve the inequality $6(5 - 2x) - 4(5 - 3x) > 5(x + 4)$.

- (c) Solve the equation $\frac{x+12}{x+4} = \frac{x+4}{x+2}$.

- (d) E whakaatu ana te hoahoa i raro i tētahi wāhanga o te kauwhata i tātuhia ko $y = 7 + x - 6x^2$. Ka tātuhia e Aroha tētahi atu rārangi ki tēnei kauwhata me te whārite $y = 8x + 4$.

Whiriwhirihia ngā uara- x o ngā pūwāhi e rua e haukoti ai ngā kauwhata e rua tētahi ki tētahi.

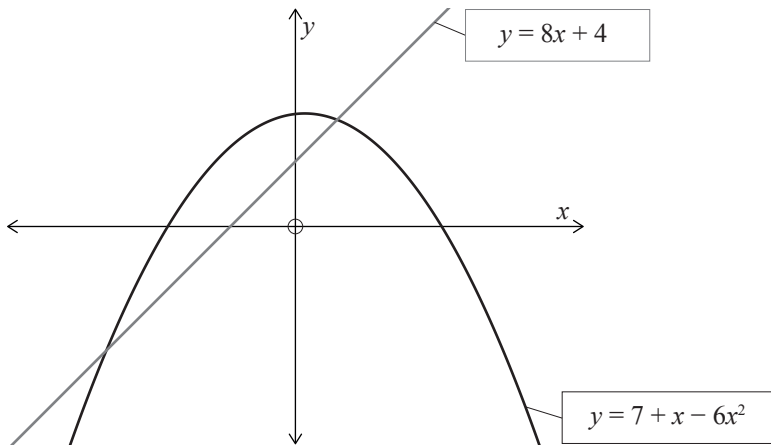


- (e) Ko te whārite o te rārangi torotika e whakaputa ana i ngā pūwāhi $(-5, -10)$ me $(9, 11)$ he pēnei, $qy = px + 5$.

Mā te whakamahi i ngā tikanga taurangi, whiriwhirihia ngā uara o ngā tau p me q .

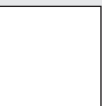
- (d) The diagram below shows a sketch of part of the graph $y = 7 + x - 6x^2$.
Aroha draws another line onto this graph with equation $y = 8x + 4$.

Find the x -values of the two points where the two graphs intersect each other.



- (e) The equation of the straight line passing through the points $(-5, -10)$ and $(9, 11)$ is given by $qy = px + 5$.

Using algebraic methods, find the values of the numbers p and q .



English translation of the wording on the front cover

**DAY 1
TUESDAY**

COMMON ASSESSMENT TASK

Level 1 Mathematics and Statistics, 2019

91027 Apply algebraic procedures in solving problems

Tuesday 17 September 2019

Credits: Four

You should attempt ALL the questions in this booklet.

Calculators may NOT be used.

Show ALL working.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

You are required to show algebraic working in this paper. ‘Guess and check’ and ‘correct answer only’ methods do not demonstrate relational thinking and will limit the grade for that part of the question to a maximum of Achievement. ‘Guess and check’ and ‘correct answer only’ may only be used a maximum of one time in the paper and will not be used as evidence of solving a problem.

A candidate cannot gain Achievement in this standard without solving at least one problem.

Answers must be given in their simplest algebraic form.

Where a question is given in words you will be expected to write an equation.

Check that this booklet has pages 2–15 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

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