



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

**Student Work Samples 
2010**

Grade 11



Mathematics



$$\left(\frac{1}{a}\right)^0 = 1$$

$$0 < b^c < 1$$

$$, b^c = (a^{-1})$$

13



13

$$0 < 8^c < \left(\frac{1}{2}\right)^0$$
$$0 < \frac{1}{4} < \left(\frac{1}{2}\right)^0$$



13

$$b^c = \frac{1^b}{4}$$



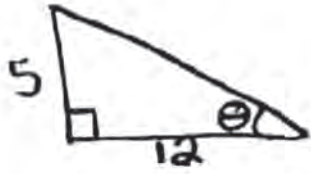
$$0 < b^c < \frac{1}{2}^0$$

$$0 < -1^c < \frac{1}{2}^0 \quad b^c = -1^c$$

13

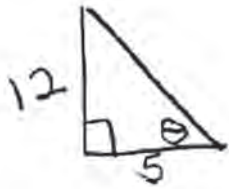


14





14



15

$$16 \cdot \frac{2}{3} = \frac{32}{3} \quad \frac{32}{3} \cdot \frac{2}{3} = \frac{64}{9}$$

$$36 \cdot \frac{2}{3} = \textcircled{24}$$

15

36, 24, 16

15

$$\frac{36}{\sqrt{3}} = \frac{6 \times 2}{\sqrt{3}} = \frac{12}{\sqrt{3}} \quad \frac{32}{\sqrt{2}} = \frac{64}{\sqrt{2}} = \frac{128}{2} = 64$$
$$\sqrt{3} \times 3 = 3\sqrt{3} \quad \sqrt{3} \times 3 = 3\sqrt{3} = 9\sqrt{3} = 27$$

$$\frac{6}{\sqrt{3}}$$

15

$36, \underline{26}, 16, \frac{32}{3}, \frac{64}{9}, \frac{128}{27}, \dots$ 26 is the missing number

15

$$36, \text{---}, 16, \frac{32}{3}, \frac{64}{9}, \frac{128}{27}$$

$$\frac{36}{3} = 12$$



16

$$y = (x + 1)^2$$



16

$$\left(\begin{array}{l} 1 \cdot 3 = 3 + 1 = 4 \\ 3 \cdot 5 = 15 + 1 = 16 \\ 5 \cdot 7 = 35 + 1 = 36 \\ 7 \cdot 9 = 63 + 1 = 64 \end{array} \right)$$

$$x \cdot (x+2) + 1 = y$$



16

$$y = (x+2)^2$$



16

$$(x+1)^2$$

17

$$\frac{x^4}{y^6}$$

17

$$\frac{x^7 y^{-5}}{x^3 y} = x^4 \left(\frac{1}{y^6} \right)$$

17

$$\frac{x^2}{y^3}$$

17

$$x^4 y^6$$

17

$$\frac{x^4}{y^4}$$



18

$$p = -4$$



18

$$5p - 1 = 9 + 3(p - 6)$$
$$5p - 1 = 9 + 3p - 18$$
$$\begin{array}{r} 5p - 1 \\ -3p \\ \hline -3p - 1 \end{array}$$

$$2p - 1 = 9 - 18$$
$$2p - 1 = -9$$
$$2p + 1 = -1$$

$$2p = -8$$
$$\frac{2p}{2} = \frac{-8}{2}$$
$$p = -4$$
A hand-drawn circle with the equation $p = -4$ written inside. Four arrows point towards the circle from the top, bottom, left, and right, suggesting a solution or a final result.



18

$$5p - 1 = 9 + 3(p - 6)$$
$$5p - 1 = 9 + 3p - 18$$
$$5p + 18 - 9 - 5p + 18$$
$$-9 = -2p$$

$$8 = -2p$$
$$\frac{8}{-2} = \frac{-2p}{-2}$$
$$-4 = p$$

$$p = 4$$

19

$$|x+6|=4$$

$$\begin{array}{r} x+6=4 \\ -6 \quad -6 \end{array}$$

$$x=-2$$

or

$$-(x+6)=4$$

$$\begin{array}{r} -x-6=4 \\ +6 \quad +6 \end{array}$$

$$\hline -x=10$$

$$x=-10$$

$$x = -2 \text{ or } -10$$

19

$$|x+6|=4$$

-10, -2

$$|-2+6|=4$$

$$|4|=4$$
$$4=4 \checkmark$$

$$|-10+6|=4$$

$$|-4|=4$$

$$4=4 \checkmark$$

19

$$x+6=4 \quad x+6=-4$$

$$x=-2 \quad x=-10$$

$$x > -10 \text{ and } x < -2$$

because of the absolute value the options need to be greater than -10 and less than -2

19

$$|x+6|=4$$

$$x+6=4$$

-6 -6

$$x=-2$$

$$|x+6|=-4$$

$$x+6=-4$$

+6 +6

$$x=2$$

19

$$\begin{array}{r} x + 6 = 4 \\ - 6 \quad - 6 \end{array}$$

$$\boxed{x = -2}$$

19

$$|x+6|=4$$

$$|x|+|6|=4$$

$$|x|+6=4$$

$$|x|=-2$$

$$x=\pm 2$$



20

$$KLm = 16 \text{ cm} \quad G \text{ HJ} = 40 \text{ cm}$$

$$\frac{16}{40} = \frac{2}{5}$$

$$a. \left(\frac{2}{5} \right)$$

$$b. \frac{2^2}{5^2}$$

$$= \left(\frac{4}{25} \right)$$



20

a) 2:5

b) 4:25



20

A) $\frac{16}{40} = \frac{4}{10}$

B) $\frac{16^2}{40^2}$



20

$$A \quad 5.3 / 13.3$$

$$b \quad 5/2$$



20

$$a. \frac{16}{40} = \frac{4}{10} = \frac{2^2}{5} \quad \left(\frac{4}{25} \right) \leftarrow \text{ML-}H$$

$$b. \frac{16^3}{40^3} = \frac{3000}{64000} = \text{area.}$$



21

$$2x - 1 = 4x + 13$$

$$2x = 4x + 14$$

$$-2x = 14$$

$$x = -7$$

$$y = 2(-7) - 1$$

$$y = -14 - 1$$

$$y = -15$$

$$y = 4(-7) + 13$$

$$y = -28 + 13$$

$$y = -15$$

$(-7, -15)$



21

Lines intersect at $(-2, -5)$

$$y = 4x + 13$$

$$y = 2x - 1$$

$$2x - 1 = 4x + 13$$

$$-4 = 2x$$

$$-2 = x$$

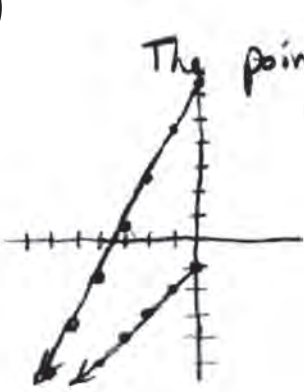
$$y = 2(-2) - 1$$

$$y = -4 - 1$$

$$y = -5$$



21



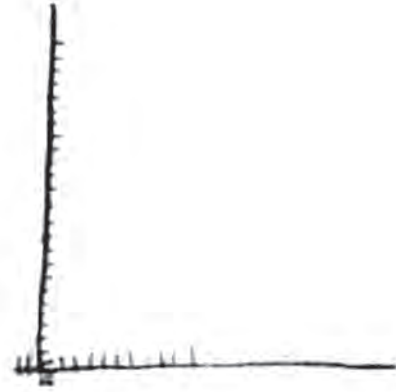
The points intersect at $(-8, -16)$ because that
where it looks like the lines are heading.



21

x	y = 2x - 1	y
0	y = 2(0) - 1	-1
1	y = 2(1) - 1	1
2	y = 2(2) - 1	3
3	y = 2(3) - 1	5

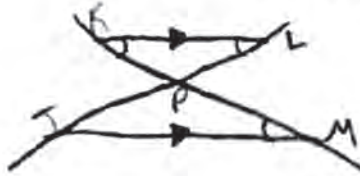
x	y = 4x + 13	y
0	y = 4(0) + 13	13
1	y = 4(1) + 13	17
2	y = 4(2) + 13	21
3	y = 4(3) + 13	25





22

a. $\angle KMJ \cong \angle LKM$ because of alternate interior angle congruence theorem



b. 1. $\overline{KL} \parallel \overline{JM}$ are // 1. given

$$\angle LKM \cong \angle KJL \cong \angle LKM$$

2. $\angle KJL \cong \angle LJM$

3. $\angle KPL \cong \angle JPM$

4. $\triangle KPL \sim \triangle JPM$

2. Alternate interior angle congruence Thm

3. Vertical angle Theorem

4. angle-angle-angle similarity Thm



22

a. It's given that $\angle LKM \cong \angle KLJ$, and that quadrilateral JKLM is an isosceles trapezoid, which, by definition implies that $\overline{KL} \parallel \overline{JM}$. Because \overline{KM} is a straight line intersecting parallel lines \overline{KL} and \overline{JM} , it is a transversal, and $\angle LKM \cong \angle KMT$ because they are \cong alternate interior angles.

b. As we just proved (a), $\angle LKM \cong \angle KMT$ because they are alternate interior angles of \parallel lines cut by a transversal. Also, $\angle KPL \cong \angle MPJ$ because they are vertical \angle s (vertical angle theorem). Therefore $\triangle KPL \sim \triangle MPJ$ due to AA \sim .



22

a. $\angle LKM$ is also congruent to $\angle KMJ$. This is because KM intersects two parallel lines, so these two angles are corresponding interior angles, so they must be the same.

b. I already proved that $\angle LKM = \angle KMJ$, and $\angle KLS = \angle LJM$ for the same reason. $\angle JPM$ and $\angle KPL$ are also equal because they are vertical angles. Therefore, all the corresponding angles are equal to each other, meaning the triangles are similar.



22

a) $\angle KMJ$ is also congruent to $\angle LKM$
because alternate interior \angle s are
 \cong .

b) The two triangles are similar because
2 angles of one triangle are
 \cong to 2 angles of the other triangle
 $\therefore KL$ is parallel to JM .



22

- a) $\angle KMS$ because they're alternate interior angles
- b) $\triangle KPL$ and $\triangle MPS$ are similar because they have parallel lines and they are apart of one shape



22

a.) $\angle LJM$ because the other angles are too big to be congruent

b.) $\triangle KPL$ is similar to $\triangle MPJ$ because all the angles are congruent to one another (AAA).



22

a) $\angle K M J$

b) 2 lines cut by a transversal
make $\angle L J M$ and $\angle K M J$
 \cong and $\angle K P L$ and $\angle J P M$
are \cong because of the
reflexive property



22

@ $\angle LKM$ is not congruent to any other angle because $\angle JPM$ is a different type of triangle than $\angle LKM$.

ⓑ Triangle KPL is similar to triangle MPJ because triangle MPJ is just increased by size to triangle KPL .

23

a. 90 is the mode of the final grade in physics.

b. Lowest math = 65

Highest " " = 100

$$\text{Range}(\text{math}) = 100 - 65 = 35$$

Lowest econ = 80

Highest econ = 100

$$\text{range}(\text{econ}) = 100 - 80 = 20$$

$$35 - 20 = 15$$

Math range is 15 points greater than economics range.

c. The final math grade is a better predictor of final physics grade because the points in that graph show a definite trend, while the econ vs math plot is fairly random.

23

A. mode = AVERAGE

69
70
75
77
80
85
90
90
90
95
851

$$\begin{array}{r} 85.1 \\ 10 \overline{) 851.0} \\ \underline{80} \\ 51 \\ \underline{50} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

85.1 = mode

B MATH: 65 to 100

eco: 80 to 100

Range of math $100 - 65 = 35$ Range of eco $100 - 80 = \frac{20}{15}$

The range of math grades is 15 greater than economics

The physics grade is a better predictor of the math grade because people who did bad in physics also did bad in math and people who did good in physics, did good in math. But every one did well in economics regardless of how they did in math.

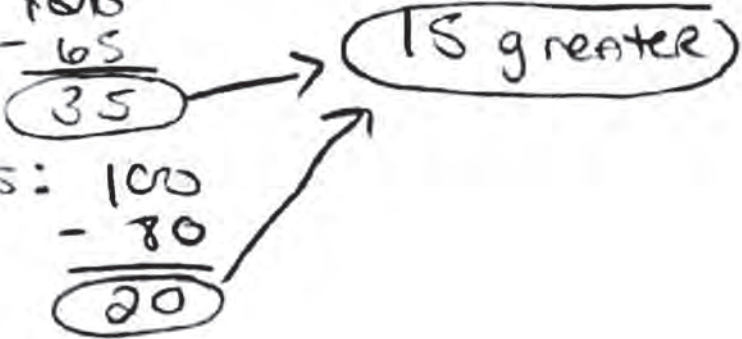
23

a) 90

b) math: $\begin{array}{r} 100 \\ - 65 \\ \hline 35 \end{array}$

Economics: $\begin{array}{r} 100 \\ - 80 \\ \hline 20 \end{array}$

15 greater



c) I think the physics class final grade for math is a better predictor. Because it shows progress.

23

- A. 90 is the mode
- B. 15
- C. Economic class

23

a. mode 90

b.

$$\begin{array}{r} 95 \\ - 65 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 90 \\ - 65 \\ \hline 35 \end{array}$$

math is greater
only by 5 points

c. The economics
class is better because
it has more grades
to go by.

23

A

Mode = 73.5 ish

B

$$\begin{array}{r} 100 \\ - 65 \\ \hline 35 \end{array}$$

35 is the range.

C The physics/math grades are better