Education Quality and Accountability Office

EQAO

Grade 9 Assessment of Mathematics

Winter 2009, Applied

Released Item-Specific Rubrics and Sample Student Responses with Annotations

Assessment of Mathematics
Grade 9 Applied Program
Specific Open-Response Scoring Guide

Jobs (Winter 2009)

Code	Descriptor
B	Blank: nothing written or drawn in response to the question
I	- Illegible: cannot be read; completely crossed out/erased; not written in English; - Irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, “?”, “!”, “I don’t know”); - Off topic: no relationship of written work to the question.
10	Application of knowledge and skills to determine the number of hours at the video store shows limited effectiveness due to • misunderstanding of concepts; • incorrect selection or misuse of procedures.
20	Application of knowledge and skills to determine the number of hours at the video store shows some effectiveness due to • partial understanding of the concepts; • errors and/or omissions in the application of the procedures.
30	Application of knowledge and skills to determine the number of hours at the video store shows considerable effectiveness due to • an understanding of most of the concepts; • minor errors and/or omissions in the application of the procedures.
40	Application of knowledge and skills to determine the number of hours at the video store shows a high degree of effectiveness due to • a thorough understanding of the concepts; • an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding)

Anchor - Code 10

Applied Winter (Question 6) Name of item: Jobs

Peter has two part-time jobs. His earnings for one week are represented by the equation below:

$$E = 7.50r + 8.25v$$

- E is his total earnings in one week;
- r is the number of hours he works at the restaurant and
- v is the number of hours he works at the video store.

Peter earns a total of $117.75 in one week. If he works 8 hours at the restaurant, how many hours does he work at the video store?

Show your work.

$E = 7.50r + 8.25v.$

$E = 750r + 8.25v + 177.75 \times 8$

$= 758.95 + 1422$

$= 2180.95.$

Annotation:
Student demonstrates misunderstanding of concepts; substitutes incorrectly into the equation with errors in solving.

Anchor - Code 20
Applied Winter (Question 6) Name of item: Jobs

Peter has two part-time jobs. His earnings for one week are represented by the equation below:

$$E = 7.50r + 8.25v$$

- E is his total earnings in one week;
- r is the number of hours he works at the restaurant and
- v is the number of hours he works at the video store.

Peter earns a total of $117.75 in one week. If he works 8 hours at the restaurant, how many hours does he work at the video store?

Show your work.

117.75 = 7.50 × 8 + 8.25v

117.75 = 60 + 8.25v

117.75 = 68.25v

V = 117.75 ÷ 68.25

V = 1.72

First I subtratated r with 8 then I multipled 8x 7.50 then added 8.25 to it. To find v I divided 68.25 by 117.75 which gave me 1.72

check:

7.50 × 8 + 8.25 × 1.72 = 117.75

Annotation:
Student demonstrates partial understanding of the concepts; substitutes correctly with an error in solving (adds unlike terms).

Anchor - Code 30
Applied Winter (Question 6) Name of item: Jobs

Jobs

Peter has two part-time jobs. His earnings for one week are represented by the equation below:

$$E = 7.50r + 8.25v$$

- E is his total earnings in one week;
- r is the number of hours he works at the restaurant and
- v is the number of hours he works at the video store.

Peter earns a total of \$117.75 in one week. If he works 8 hours at the restaurant, how many hours does he work at the video store?

Show your work.

$7.50 \times 8 = 60$

$\$117.5 - 60 = 57.5$

$57.5 \div 8 = 7.1875$

Peter worked about 7 hours and a half at the video store.

Annotation:
Student demonstrates minor errors in the application of the procedures; copies total earnings incorrectly, divides by 8 instead of \$8.25.

Anchor - Code 40

Applied Winter (Question 6) Name of item: Jobs

Peter has two part-time jobs. His earnings for one week are represented by the equation below:

$$E = 7.50r + 8.25v$$

- E is his total earnings in one week;
- r is the number of hours he works at the restaurant and
- v is the number of hours he works at the video store.

Peter earns a total of $117.75 in one week. If he works 8 hours at the restaurant, how many hours does he work at the video store?

Show your work.

$7.50 \times 8 + 8.25 + 8.25 + 8.25 + 8.25 + 8.25 + 8.25$
$8.25 = 117.75$

$\therefore$ he will be working 8 hrs at the restaurant and $\boxed{7 \text{ hrs}}$ at the video store. if he is making a total of $117.75 in one week

Annotation:
Student demonstrates a thorough understanding of the concepts; total earnings for the restaurant are determined and $8.25 is added 7 times for a total of $117.75.

Poster Printing (Winter 2009)

Code	Descriptor
B	Blank: nothing written or drawn in response to the question
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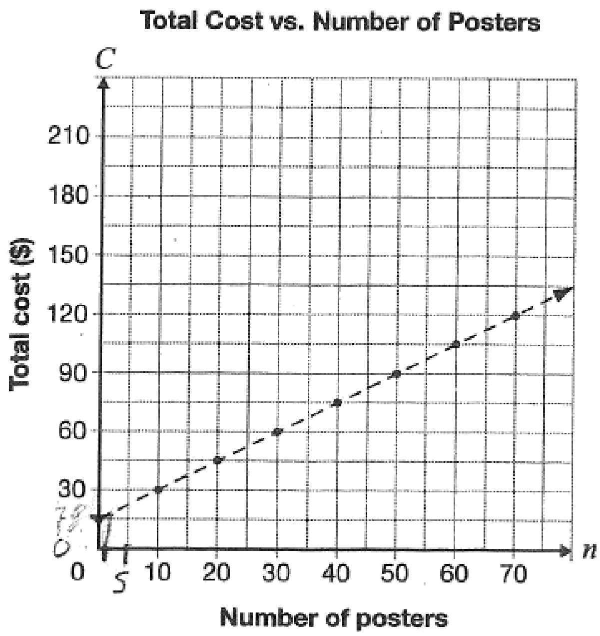
10	Application of knowledge and skills to determine the charge per poster shows limited effectiveness due to • misunderstanding of concepts; • incorrect selection or misuse of procedures.
20	Application of knowledge and skills to determine the charge per poster shows some effectiveness due to • partial understanding of the concepts; • errors and/or omissions in the application of the procedures.
30	Application of knowledge and skills to determine the charge per poster shows considerable effectiveness due to • an understanding of most of the concepts; • minor errors and/or omissions in the application of the procedures.
40	Application of knowledge and skills to determine the charge per poster shows a high degree of effectiveness due to • a thorough understanding of the concepts; • an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding)

Anchor - Code 10
Applied Winter (Question 15) Name of item: Poster Printing

Poster Printing

The total cost to print posters includes a set-up fee plus a charge per poster. The graph below represents the relationship between C, the total cost, and n, the number of posters printed.



Determine the charge per poster.

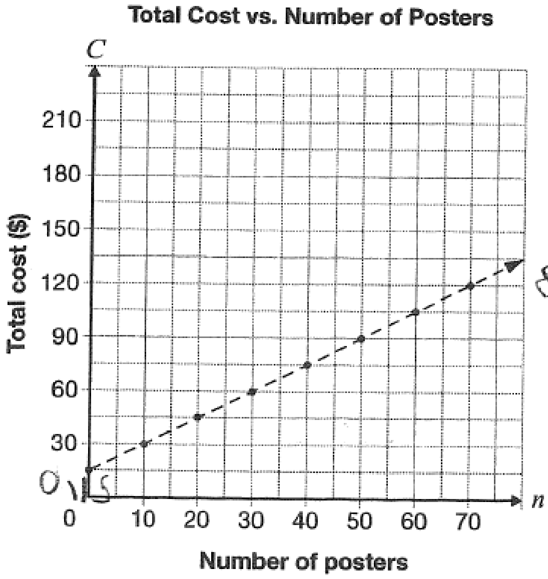
Show your work.

It would cost about $10 per poster because at one on the graph you go up and you land at the ten.

Annotation: Student demonstrates a misuse of procedures; limited understanding of rate of change. No points are selected to support rational given and 'rise over run' is incorrectly applied.

Poster Printing

The total cost to print posters includes a set-up fee plus a charge per poster. The graph below represents the relationship between C, the total cost, and n, the number of posters printed.



80,125

$25-15$
$=10$

$80-0$
$=80$

$\frac{10}{80}$
$=0.125$

Determine the charge per poster.

Show your work.

$C = 15 + (0.125n)$

$C = 15 + (0.125 \times 80)$

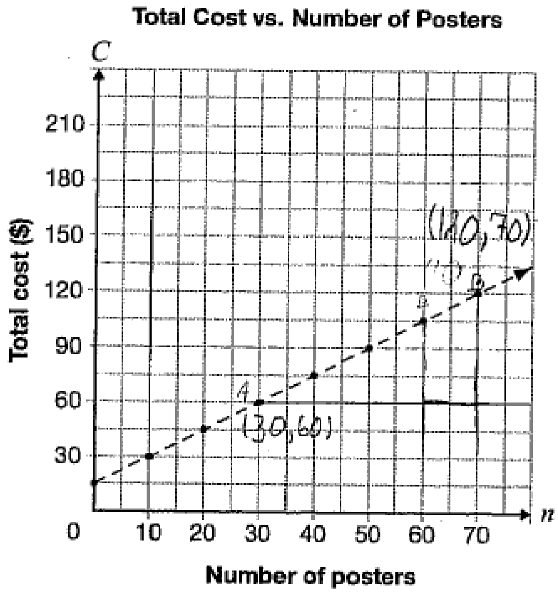
$C = \$25$

$\therefore$ the charge per poster is 25 dollars.

Annotation:
Student demonstrates a partial understanding of the concept of rate of change. Student uses differences but chooses an incorrect value (80,25) for rise and then finds the total cost of 80 posters.

Anchor - Code 30
Applied Winter (Question 15) Name of item: Poster Printing

The total cost to print posters includes a set-up fee plus a charge per poster. The graph below represents the relationship between C, the total cost, and n, the number of posters printed.



Determine the charge per poster.

Show your work.

$0.60/poster

rate of change

rise = 70-30 = 40

run = 120-60 = 60

$\frac{40}{60}$ = .$\dot{6}$

∴ to find the cost of one poster I found the rate of change which is 0.60. So, it would cost a person $0.60 per poster.

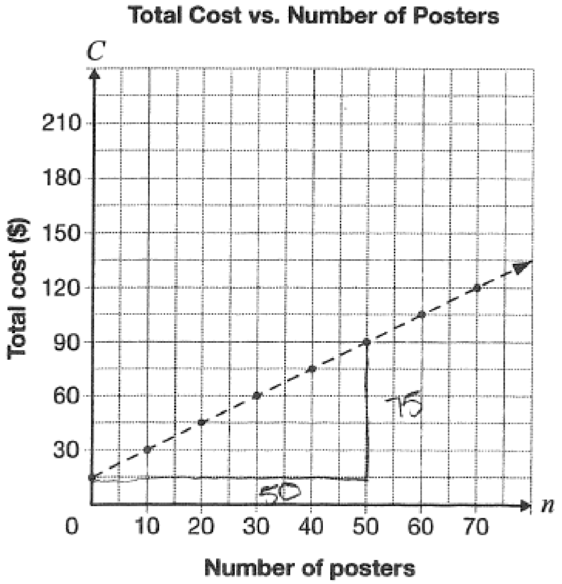
Annotation:
Student demonstrates a minor error in the application of the procedures; calculates the cost per poster by using two points on the graph, but mixes up the rise and run (should be 60/40).

Anchor - Code 40

Applied Winter (Question 15) Name of item: Poster Printing

Poster Printing

The total cost to print posters includes a set-up fee plus a charge per poster. The graph below represents the relationship between C, the total cost, and n, the number of posters printed.



Determine the charge per poster.

Show your work.

$\frac{\text{rise}}{\text{run}} = \frac{75}{50} = 1.5$

∴ the charge for one poster is $1.50

Annotation:
Student demonstrates a thorough understanding of rate of change. Rise/Run triangle is shown on the graph and the rate of change is calculated.

Assessment of Mathematics
Grade 9 Applied Program
Specific Open-Response Scoring Guide

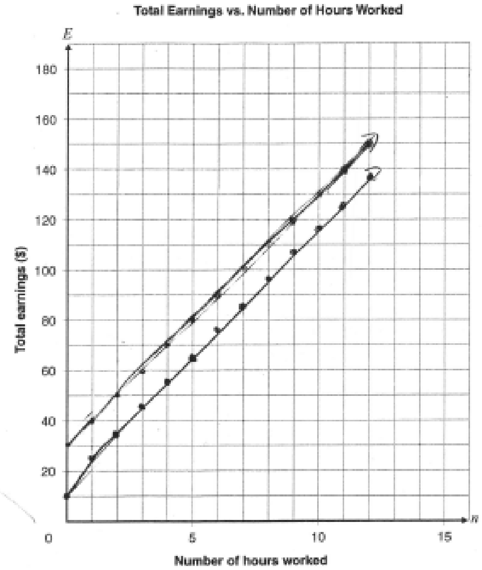
Part-Time Jobs (Winter 2009)

Code	Descriptor
B	Blank: nothing written or drawn in response to the question
I	- Illegible: cannot be read; completely crossed out/erased; not written in English; - Irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, “?”, “!”, “I don’t know”); - Off topic: no relationship of written work to the question.
10	Problem-solving process to determine graphically the point of intersection and interpret the intersection point in the context shows limited effectiveness due to • minimal evidence of a solution process; • limited identification of important elements of the problem; • too much emphasis on unimportant elements of the problem; • no conclusions presented or conclusion presented without supporting evidence.
20	Problem-solving process to determine graphically the point of intersection and interpret the intersection point in the context shows some effectiveness due to • an incomplete solution process; • identification of some of the important elements of the problem; • some understanding of the relationships between important elements of the problem; • simple conclusions with little supporting evidence.
30	Problem-solving process to determine graphically the point of intersection and interpret the intersection point in the context shows considerable effectiveness due to • a solution process that is nearly complete; • identification of most of the important elements of the problem; • a considerable understanding of the relationships between important elements of the problem; • appropriate conclusions with supporting evidence.
40	Problem-solving process to determine graphically the point of intersection and interpret the intersection point in the context shows a high degree of effectiveness due to • a complete solution process; • identification of all important elements of the problem; • a thorough understanding of the relationships between all of the important elements of the problem; • appropriate conclusions with thorough and insightful supporting evidence.

Anchor - Code 10
Applied Winter (Question 16) Name of item: Part-Time Jobs

Liz's new job offers a one-time bonus of $30 and an hourly pay rate of $10 per hour. Alex has a new job that pays $15 per hour.

Graph each person's total earnings on the grid below. Label each line.



Determine where the lines intersect.

The lines intersect at 0.

What does this point represent?

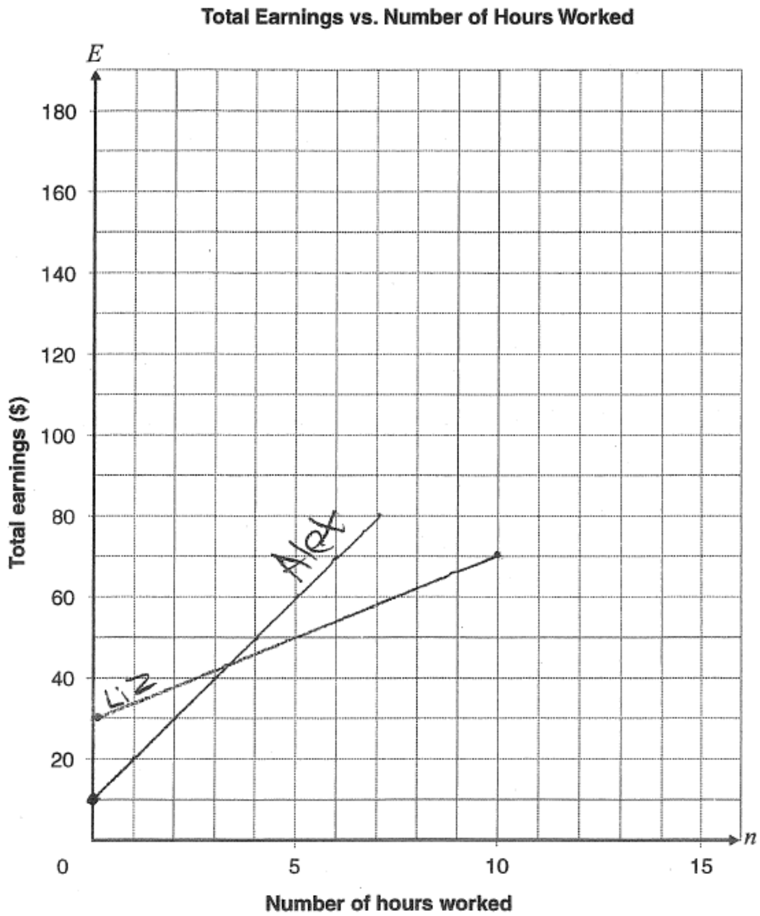
Annotation:
Student demonstrates a limited identification of important elements of the problem; graphs Liz's line correctly however, Alex's line is incorrect. The intersection point is incorrect based on their graph, and conclusion is omitted.

Anchor - Code 20
Applied Winter (Question 16) Name of item: Part-Time Jobs

Part-Time Jobs

Liz's new job offers a one-time bonus of $30 and an hourly pay rate of $10 per hour. Alex has a new job that pays $15 per hour.

Graph each person's total earnings on the grid below. Label each line.



Determine where the lines intersect.

The lines intersect at 40$.

What does this point represent?

At the 40$ they get paid the Same amount

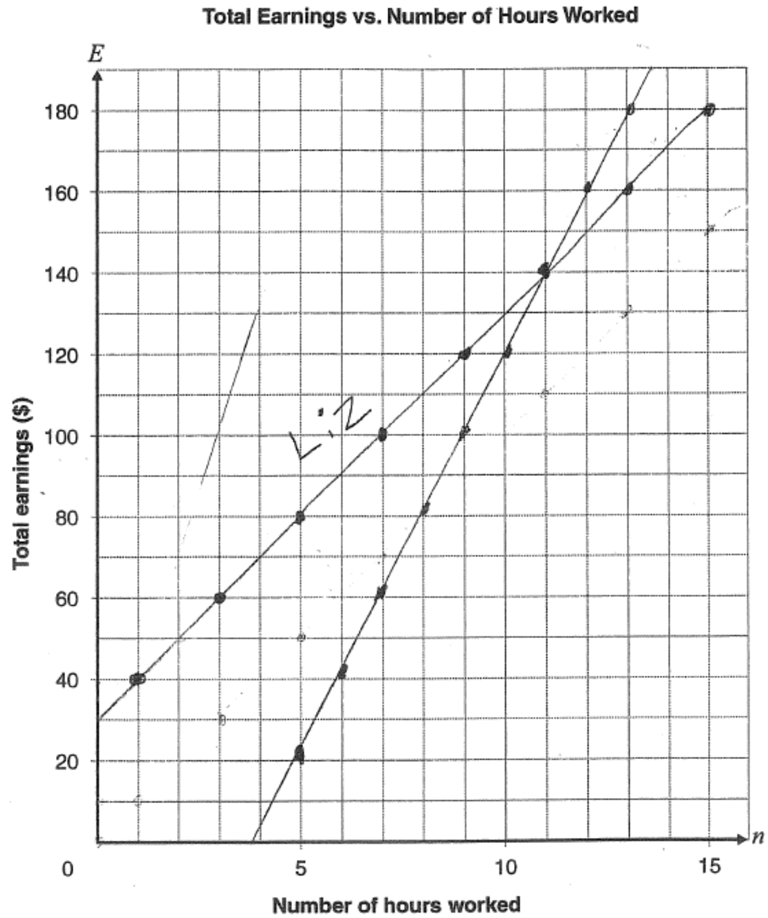
Annotation:
Student demonstrates some understanding of the relationships between important elements of the problem; both lines are graphed incorrectly however the intersection point closely matches graph and its interpretation is correct.

Anchor - Code 30
Applied Winter (Question 16) Name of item: Part-Time Jobs

Part-Time Jobs

Liz's new job offers a one-time bonus of $30 and an hourly pay rate of $10 per hour. Alex has a new job that pays $15 per hour.

Graph each person's total earnings on the grid below. Label each line.



Determine where the lines intersect.

The lines intersect at 140 and 11.

What does this point represent?

The point represents that they both got the same amount of money.

Annotation:
Student demonstrates a considerable understanding of the relationships between the important elements of the problem; Alex's line is graphed incorrectly however the intersection point matches the graph and its interpretation is correct.

Anchor - Code 40
Applied Winter (Question 16) Name of item: Part-Time Jobs

Part-Time Jobs

Liz's new job offers a one-time bonus of $30 and an hourly pay rate of $10 per hour. Alex has a new job that pays $15 per hour.

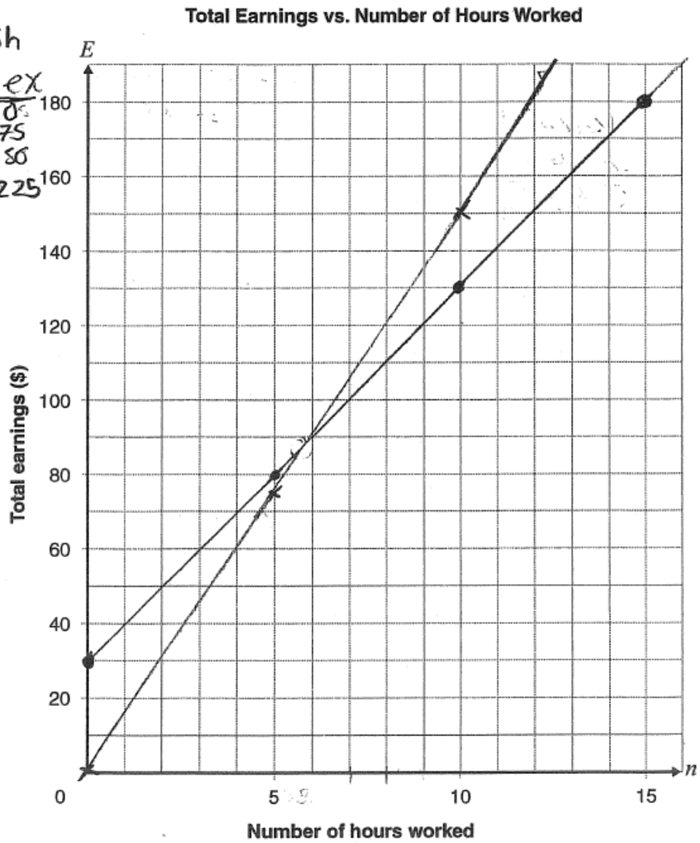
Graph each person's total earnings on the grid below. Label each line.

30+10h

Liz's	
0	30
5	80
10	130
15	180
20	230

15h

Alex	
0	0
5	75
10	150
15	225



• Liz's

× Alex

Determine where the lines intersect.

The lines intersect at 5:50, 85.

What does this point represent? This point represent the intersecting of the two lines and also the point of day that Liz and Alex earns the same amount of money.

Annotation:
Student demonstrates a thorough understanding of the relationships between all of the important elements of the problem; both lines are graphed fairly accurately, point of intersection matches graph and its interpretation is correct.

Parallel Illusions (Winter 2009)

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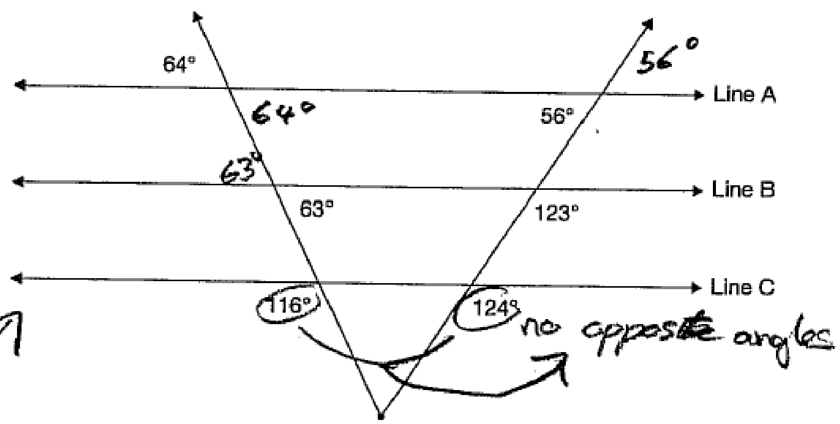
B	Blank: nothing written or drawn in response to the question
I	- Illegible: cannot be read; completely crossed out/erased; not written in English; - Irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, “?”, “!”, “I don’t know”); - Off topic: no relationship of written work to the question.
10	Application of knowledge and skills of the properties and relationships of angles formed by parallel lines cut by a transversal to determine which lines are parallel shows limited effectiveness due to • misunderstanding of concepts; • incorrect selection or misuse of procedures.
20	Application of knowledge and skills of the properties and relationships of angles formed by parallel lines cut by a transversal to determine which lines are parallel shows some effectiveness due to • partial understanding of the concepts; • errors and/or omissions in the application of the procedures.
30	Application of knowledge and skills of the properties and relationships of angles formed by parallel lines cut by a transversal to determine which lines are parallel shows considerable effectiveness due to • an understanding of most of the concepts; • minor errors and/or omissions in the application of the procedures.
40	Application of knowledge and skills of the properties and relationships of angles formed by parallel lines cut by a transversal to determine which lines are parallel shows a high degree of effectiveness due to • a thorough understanding of the concepts; • an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding)

Anchor - Code 10
Applied Winter (Question 21) Name of item: Parallel Illusions

Often lines that look parallel are not parallel.



Which two lines in the diagram above are parallel?

Justify your answer using geometric properties.

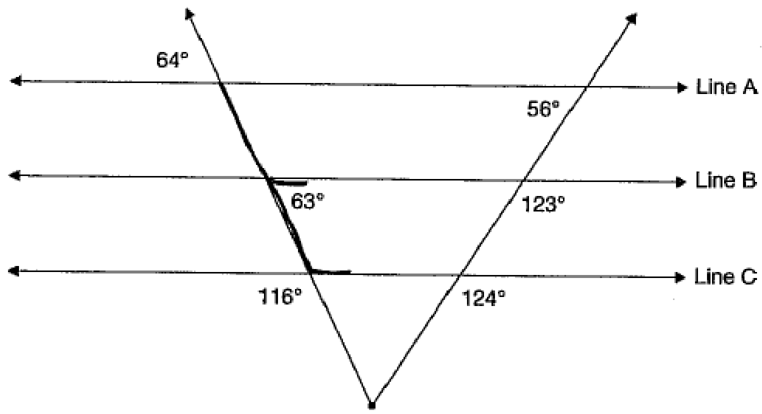
Lines B and A are parallel.

Look above

Annotation:
Student demonstrates a misunderstanding of the concepts; justication provided does not relate to parallel lines and choice of lines A and B is incorrect.

Anchor - Code 20
Applied Winter (Question 21) Name of item: Parallel Illusions

Often lines that look parallel are not parallel.



Which two lines in the diagram above are parallel?

Justify your answer using geometric properties.

Line A and Line C are parallel.
They are parallel because
they dont intersect like line A and line B.
they also are the F pattern.

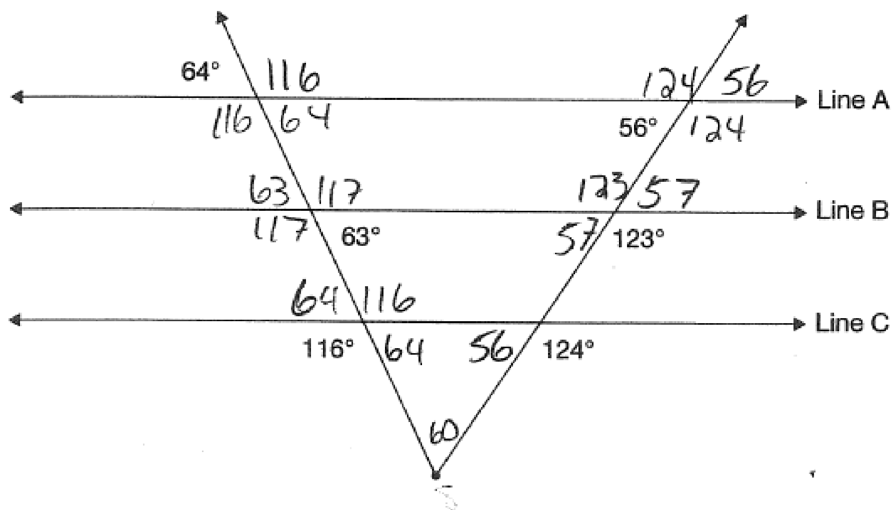
<u>Annotation:</u>
Student demonstrates a partial understanding of the concepts; selects lines A and C, but supporting evidence is unclear as reference to the F-pattern on the diagram does not connect to the justification or support the choice of A and C. Mention of F-pattern shows some understanding of parallel lines.

Anchor - Code 30

Applied Winter (Question 21)   Name of item: Parallel Illusions

Parallel Illusions

Often lines that look parallel are not parallel.



Which two lines in the diagram above are parallel?

Justify your answer using geometric properties.

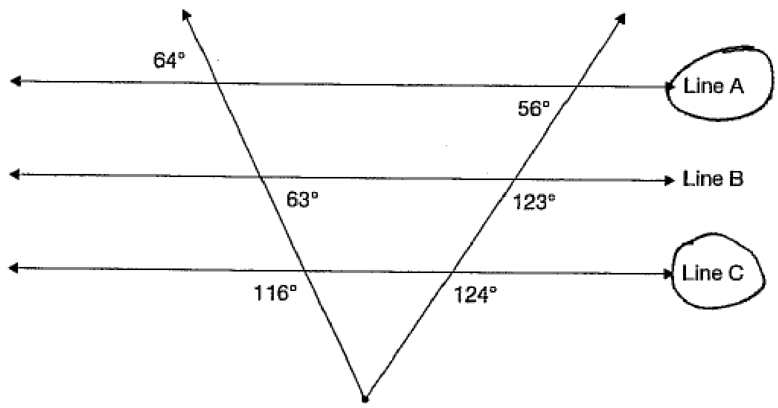
∴ the two lines that are parral are line A & line C.

Annotation:
Student demonstrates an understanding of most of the concepts; student shows correct angle measures but does not connect line A to line C.

Anchor - Code 40

Applied Winter (Question 21) Name of item: Parallel Illusions

Often lines that look parallel are not parallel.



Which two lines in the diagram above are parallel?

Justify your answer using geometric properties.

124+56=180°
116+64=180

line A,C are parallel because since they are on oposit sides of a straight line they have to equal 180°. both sides of the V are also parallell so yes A,C are parallel lines.

Annotation:
Student demonstrates a thorough understanding of the concepts; Lines A and C are selected as parallel with justification of angles that add up to 180° and discussion of angles on opposite sides of a transversal.