

PrBL Title: Expressions Integers & Equations

Driving Question: How can we,
as judge, write an equation that
will assign ticket fines to
speeders?

Grade: Foundations of Algebra (Math Navigator: Expressions)

CCSS: A3 Linear Equations & Inequalities in one variable

- A-REI.1
- A-REI.3
- A-REI.11
- A-CED.1
- A-CED.3
- A-CED.4
- 6.EE.1
- 6.EE.2, a,b,c
- 6.EE.3
- 6.EE.4

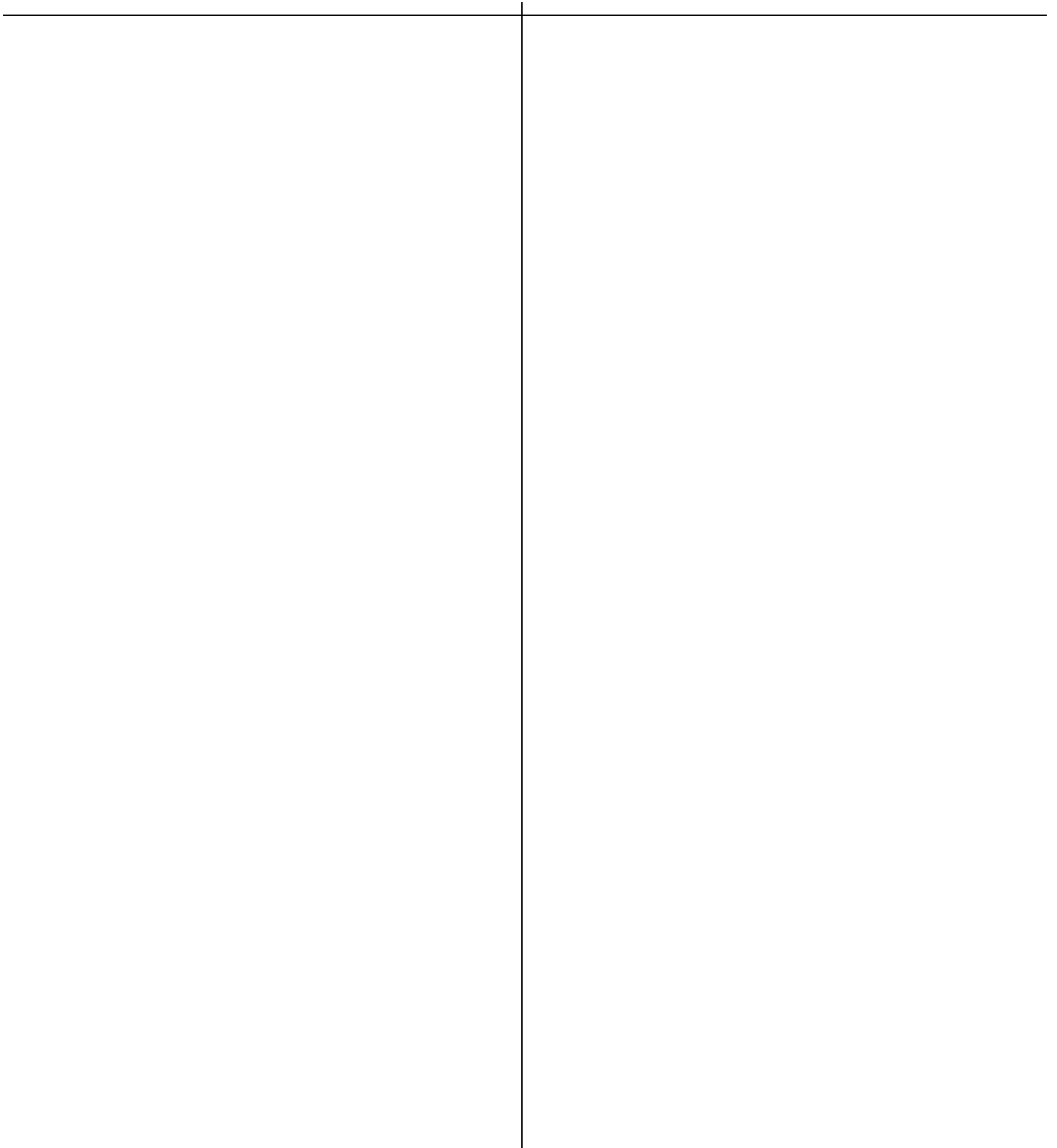
MAJOR PROJECT LIST

	Possible Points	Points Earned
Math Minute 1	5	
Math Minute 2	5	
Math Minute 3	5	
Math Minute 4	5	
Math Minute 5	5	
Math Minute 6	5	
Time To Reflect 1 - Story	10	
Time To Act – Part II	10	
Write the Ticket – Part III	10	
Time to Reflect – Part IV	10	
Judge Judy – Part V	10	
Time to Reflect – Part V	10	
Judge Judy – Part VI	10	
Time To Reflect – Part VI	10	
Time to Act – Part VII		
UNIT TEST	100	
Total Points	210	

What We....

KNOW

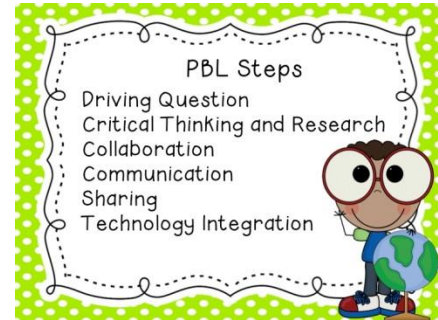
NEED TO KNOW



Guiding Questions

Note: This unit builds upon your understanding and fluency with algebraic expressions and equations.

1. How do I write a paper in MLA Style?
2. What is Easybib.com?



CALENDAR

Monday	Tuesday	Wednesday	Thursday	Friday

MATH MINUTE – Lesson 1

In February of 2011, the tallest man on Earth measured in at 8ft and 3in tall. The average male height is 5ft 9in with an average shoe size of 10.5. Based on these measurements, what size shoe would the tallest man on Earth wear?



PART 1 – NOT SO FAST

“Mom please hurry up! We are going to be late for school!” Jasmine impatiently insists as her mom rushes to dress her little brother Kyle. “I am going as quickly as I can sweetie. I’ll get you to school on time” assures mom. “Go ahead and get in the car. I’m getting my purse now” says mom. As they start to pull out of



the drive way Kyle remembers, ‘Mom my lunch?’ “Oh! I left it on the counter” mom replies. Pull back into the driveway, mom runs inside and gets Kyle’s lunch. “Great! Just great!



Jasmine barks. “We are going to be so late!” Mom replies, “Sweetie I’ll just drive a little faster than usual and we will get there in plenty of time.” As they drive through their busy neighborhood towards school, Jasmine looks over at the speedometer, “Mom! You’re driving 40 mph. The speed limit is 25!” “Oh sweetie I’m not speeding. Look everyone else is travelling the same speed” replies mom. As they finally make it onto the



main road, Kyle sticks his hand out of the car window and flies an imaginary airplane as the wind rapidly rushes past. “Mom! You’re passing the other drivers” says Jasmine. Looking over at the speedometer “and you’re driving 65 mph through a 45 mph construction zone!” Jasmine shouts. “Oh sweetie, the workers aren’t out here yet” explains mom, “and we are almost at school.”

Reaching the 15 mph school zone, Jasmine notices, “Mom! You’re going 30 mph!” About that time mom notices blue lights flashing in her rearview mirror. Jasmine sinks into her seat.



During this assignment you are required to write/type all your answers out in **complete paragraphs** with **complete sentences**. I would like you to work in **MLA style and** cite all your sources. (easybib.com)

PART I - TIME TO REFLECT

1. Although Jasmine is in a hurry to get to school, why is she concerned about how fast her mom is driving? What could happen as a result of speeding? Why are speed limits placed in residential, school, and construction zones?
 2. At what times did Jasmine's mom exceed the speed limit? Did she exceed the speed limits by a lot or just a little? Explain for each instance. What is the legal punishment for speeding?
 3. To enforce speed limits, fines are established so that anyone exceeding the speed limit has to pay a fine. What fine would you establish for someone exceeding a speed limit and by how much? Would the fine change depending on if it was in a school or construction zone? Explain
-

EXAMPLE

Josephina Student

Ms Blumer

Foundations of Algebra (9G)

October 28, 2014

Time to Reflect – Part 1

Even though Jasmine is in a hurry she is concerned about her mother's speeding because

MLA STYLE

1"
↑
↓

Your Name

Instructor's Name

Class information (English 1A)

Date

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Center Title of Essay

Begin your paragraph one double-spaced line below

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your centered title; the paragraph should begin with a 1/2" tabbed indent. The paper's heading goes in the upper-left corner of the first page only. Use 1" margins all around. Double space everything, including blocked quotes. Do not justify the right margin.

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Roberts 10

Works Cited

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Brindle, Reginald Smith. "The Search Outwards: The Orient, Jazz, Archasims." *The New Music: The Avant-Garde since 1945*. New York: Oxford UP, 1957. 133-145. Print.

Gammond, Peter, ed. *Duke Ellington: His Life and Music*. 1958. New York: Da Capo, 1977. Print.

1"

Griffiths, Paul. *A Concise History of Avant-Garde Music: From Debussy to Boulez*. New York: Oxford UP, 1978. Print.

1"

Hitchcock, H. Wiley. *Music in the United States: An Introduction*. 2nd ed. Englewood Cliffs: Prentice, 1974. Print.

Lawrence, A.H. *Duke Ellington and His World: A Biography*. New York: Routledge, 2001. Print.

MLA style example

1"

MATH MINUTE – Lesson 2

A police chase involving a stolen vehicle resulted in speeds up to 104 mph on the interstate. If the speed limit was 65 mph, what percent over the speed limit was the vehicle traveling?



PART II – THE TICKET

Mom rolls down her window as Officer Blumer steps out of his police cruiser and walks toward her car. “Ma’am what’s the hurry this morning?” Officer Blumer asks. “Just getting the kids off to school officer” mom nervously replies. “Ma’am I’m going to have to see your license and registration” says Officer Blumer. “Is there a problem officer?” asks mom. Looking at her license Officer Blumer explains, “Ma’am, I’ve been following you for quite a while. Did you know I clocked you speeding at least 15 mph over the posted limit?” “I told you mom, but no one listens to me” Jasmine adds with attitude as she folds her arms. “I am going to have to issue you a ticket for speeding” explains Officer Blumer. Jasmine butts in, “I knew it! I knew we wouldn’t make it to school on time.” “Now sweetie it’s just a small fee” mom replies. Mom then asks, “How much is the ticket officer?” “Well now. That depends on which zone you were speeding in” Officer Blumer replies. “Speeding violations along streets and major highways cost \$6.00 for every mile over the posted speed limit plus a \$61.00 court fee” responds the officer. “My, that does sound steep officer” says mom. “However,



speeding in a construction and school zones increases to \$7.00 for every mile over the posted speed limit plus the \$85.00 court fee, plus the fine of \$300.00” explains officer Blumer as he scribbles the ticket. “It looks as if I might owe quite a bit of money here” admits mom. Jasmine immediately begins to calculate the cost in her head. Officer Blumer tears the ticket out of his ticket book and hands the ticket to mom.

During this assignment you are required to write/type all your answers out in complete paragraphs with complete sentences. I would like you to work in MLA style and cite all your sources. (easybib.com). Continue working from your previous paper.

PART II - TIME TO ACT

4. What two expressions could be used to represent the cost of a speeding ticket on (1) streets and highways, and (2) in construction and school zones?
5. Using these expressions as equations, how much would mom have to pay if she was caught speeding in (1) her neighborhood, (2) the construction zone, or (3) the school zone. Use the speeds Jasmine noticed to explain your work.
6. The ticket the officer handed mom indicated she was speeding in a 45 mph construction zone in the amount of \$511.00. Just how fast was mom traveling when the officer clocked her speeding?

Firstname Lastname

Ms Blumer

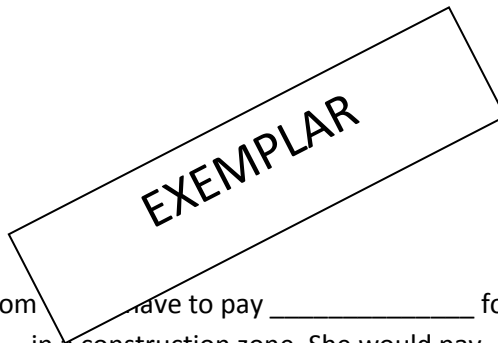
Foundations of Algebra (9D)

October 29, 2014

PART II – Time to Act

4. There are 2 expressions I could write to represent the cost of the ticket. The first expression, streets and highways, would be _____. In construction and school zones the expression would be _____.

(Show My Work in Pencil)



5. Using these equations mom _____ have to pay _____ for speeding in her neighborhood. She would pay _____ in a construction zone. She would pay _____ in a school zone.

(Show My Work in Pencil)

6. Mom got a ticket for \$511.00 for traveling in a 45 mph construction zone. Using an equation I found that mom was traveling at _____ mph.

(Show my work in Pencil)

PART III – YOU WRITE THE TICKET

1. Speeding \$6.00 / mile over the speed limit plus \$61.00
2. Speeding in a school/work zone ... \$7.00 / mile over the posted speed limit plus the \$85.00 court fee plus the fine of \$300.00



- Image 1: 20 mph – in a 5 mph zone (shopping plaza)
- Image 2: 40 mph – in a 25 mph zone (Residential Area)
- Image 3: 40 mph – in a 35 mph (Work Zone)
- Image 4: 54 mph – in a 60 mph (Interstate Highway)
- Image 5: 30 mph – in a 15 mph (School Zone)
- Image 6: 80 mph – in a 60 mph (Interstate highway)

Turn on the radar; it's your turn to write some tickets. Look at these (6) images. Calculate the cost for each speeding violation then issue the ticket. (Show All Work!) Be ready to explain yourself. You know how mad some motorists can get.



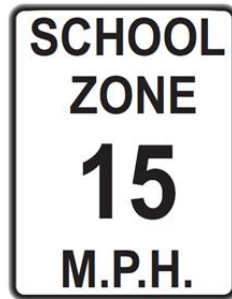
During this assignment you are required to write/type all your answers out in complete paragraphs with complete sentences. I would like you to work in MLA style and cite all your sources. (easybib.com). Continue working from your previous paper.

PART IV – TIME TO REFLECT

7. On the highway, its common for everyone to drive faster than the speed limit. If the flow of traffic in a 60 mph is 70, would you slow down or “do” the speed limit? Explain.
8. What do you think is more dangerous: driving 10 miles over the speed limit, or 10 miles under? Explain.
9. Do you think police officers would write you a ticket for going 5 mph over? 10? 20? Explain your reasoning.

MATH MINUTE – Lesson 3

In most states, driving 80 mph is considered reckless driving resulting in jail time. What is the minimum amount for a speeding ticket for reckless driving in a 15 mph school zone?



MATH MINUTE – Lesson 4

Solve the Following:

$$9c + 5 - 4c = -20$$

$$5b + 6 - 6b + 2 = 19$$

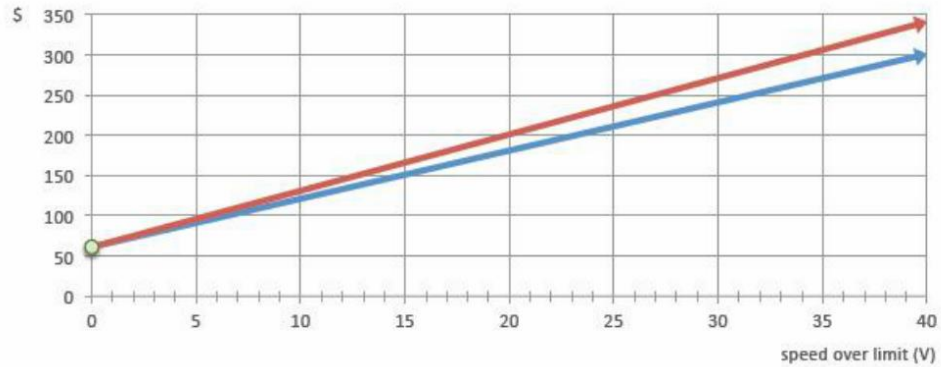
VI- JUDGE JUDY

Since your knowledge in the case led in the successful removal of speeding tickets for your friends, Judge Judy would like for you to help her solve some other speeding cases. Listed in the case files you will find a chart that represents the cost of a speeding fine in relation to the number of miles over the speed lime. Help Judge Judy find the appropriate fine amount or speed over the limit for each instance.



Act Three: Match 'Em, Danno

- 8 The graphs below show the fines for speeding in a regular & school/work zone. Use the graphs, as well as any other methods, to fill in the missing information below. If you can't figure out the answer exactly, explain why.



<p>SPEED LIMIT 5</p> <p>Fine =</p>	<p>SCHOOL SPEED LIMIT 15</p> <p>Fine =</p>	<p>SPEED LIMIT 60</p> <p>Fine = \$181</p>	<p>Fine = \$331</p>
<p>SPEED LIMIT 55 ROAD WORK</p> <p>Fine = \$96</p>	<p>Fine = \$201</p>	<p>Fine = \$103</p>	<p>Fine = \$61</p>

TWO STEP PROCESS

Use inverse operations to undo:

1st – any addition and subtraction

2nd – any multiplication and division

TIME TO REFLECT – Part VI

1. Which line represents the cost of the fine in the school/work zone? How do you know?
2. At what value on the graph do the two lines touch? What does this value represent?
3. Were there any instances when the ticket was not legitimate? What was the issue?

Part VII – Multiple Violations

In most states you can be charged with multiple vehicular violations for the same speeding offense and even arrested due to the seriousness of the incident. For instance speeding in



inclement weather such as raining and snowing is much more dangerous than speeding on a sunny day. Also speeding through a construction zone or pedestrian zone is much more severe when workers and pedestrians are present. In addition to the regular speeding cost of \$6.00 per mile over and \$7.00 per mile over for work/school zones, the chart below lists the fines associated with multiple offenses.

Violation	Fine Cost
Speeding in inclement weather	Regular Speeding ticket plus an additional \$10 for every mile over the speed limit
Speeding in a construction/ pedestrian zone with workers/persons present	Double the fine for speeding in a construction/pedestrian zone
Hitting a worker/pedestrian while speeding	Triple the fine for speeding in a construction/pedestrian zone
Reckless Driving- speeding 80 mph or more	Regular speeding ticket plus \$1000.
**Add a one time court cost fee of \$61 to the fine cost	

TIME TO ACT – Part VII

1. Including the \$61.00 court cost, use the chart above along with the previous speeding fines to write an expression that represents the cost of a fine for speeding:

- a. In inclement weather through a normal speed zone and a school zone.
- b. In a construction /pedestrian zone with workers present.
- c. For hitting a worker/pedestrian while speeding.
- d. For reckless driving



2. Find the fee costs for the following violations including the \$61.00 court cost:
 - a. Driving 60 mph with a speed limit of 45 mph in heavy rain.
 - b. Driving 65 mph in a 45 mph construction zone with workers present.
 - c. Driving 30 mph in a 10 mph pedestrian zone in fog and hitting a runner.
 - d. Driving 110 mph with a speed limit of 65 mph.

3. Find the number of miles over the speed limit for the violators below:
 - a. Melanie received a \$201 ticket in a 45 mph construction zone with workers present. How many miles over the speed limit was she going?
 - b. Antonio hit a person in the Target parking lot in a 5 mph zone while speeding. His ticket was \$166.00. How far over the speed limit was he going?
 - c. An escaped convict was speeding in a 45 mph construction zone with workers present as it started to rain and hit a worker. The judge charged him with reckless driving and slapped him with a \$5611 ticket. How fast was the convict going?

During this assignment you are required to write/type all your answers out in **complete paragraphs** with **complete sentences**. I would like you to work in **MLA style and** cite all your sources. (easybib.com)

TIME TO REFLECT – Part VII



1. When calculating fees for multiple speeding violations, can the fees be combined or should they be calculated separately? Explain.
2. When more than one fee is issued for a speeding violation and the fee had to be doubled or tripled, does each fee get doubled or tripled? Explain.

Name: _____

Ms Blumer

Foundations of Algebra (9____)

UNIT TEST

Dodge Charger Pursuit



Law Enforcement in New York purchased brand new police interceptors to help crack down on its heavy-footed speeders along many of its major highways and roads. But paying for these new police cars comes with a price. To help offset the \$40,000 price tag, the cost of speeding tickets has increased. The speeding costs are \$11.00 for every mile over in regular zones and \$15 per mile over for work/school/pedestrian zones to include an additional \$90.00 court fee and \$400.00 fine. Use the new speeding finds to answer the questions below.

Violation	Fine Cost
Speeding in inclement weather	Regular Speeding ticket plus an additional \$15 for every mile over the speed limit
Speeding in a construction/ pedestrian zone with workers/persons present	Double the fine for speeding in a construction/pedestrian zone
Hitting a worker/pedestrian while speeding	Triple the fine for speeding in a construction/pedestrian zone
Reckless Driving- speeding 80 mph or more	Regular speeding ticket plus \$1500.
**Add a one time court cost fee of \$80 to the fine cost	

