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From textual problems to mathematical relationships: case studies of secondary school students and the discourses at play in interpreting word problems

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Duskhaven – Peer group discussion

Stanza 1

1. Nina — What did I get for number one?
2. Gio — For question number one... I've found it a little bit confusing.
3. Nina — ... I couldn't understand the words actually...
4. Sipho — Naa... but, err, I could understand the words...
5. Nina — I have two...

Stanza 2

6. Gio — I forgot the rules...
7. Nina — ... the rules we learned in grade 9?
8. Gio — ... yes, so I just added up and calculated...
9. Nina — Yes, me too.

Stanza 3

10. Gio — Ja. Well actually was...
11. Nina — ... what, what you have?
12. Gio — What answers do you have?
13. Sipho — I've got a [inaudible]...
14. Nina — I had the same as the first one.

Stanza 4

15. Gio — No, no... the problem… [inaudible]…
16. Sipho — I said, I took...umm, I took...err... the length of the...

Stanza 5

17. Gio — Where did you got the *x* from?
18. Sipho — The *x* ? Not the *y* ?

Stanza 6

19. Nina — Oh the *x*. Oh, you using the *x* for the first one because they don't give you...
20. Sipho — No, no, no, no... they're not giving you... err, they are not giving you the... umm, thingy... the...
21. Nina — ... the length.
22. Gio — ... oh, ja, ja...
23. Sipho — ... the breadth, so you take, use the *x*... and my *x*...

Stanza 7

24. Sipho ... my answers, I got one metres, one metre for the breadth...

25. Gio ... it needs two answers... the length and the breadth...

26. Sipho Yeah, for the breadth I got one, one metre, and for the length I got three metres.

27. Nina Correct, I got two for the breadth and one for the length.

Stanza 8

28. Sipho ... so what *x* do's...

29. Gio So which one is, is right then?

30. Nina I think Sipho. There's no logic, because I didn't use the *x*.

Stanza 9

31. Gio Number two I think is easy...

32. Nina Number two... [inaudible]... because in five days you can pay..., like if you rent for five days in this you gonna pay for six days, the money that you should take together is exactly six days in the, the Clear Vision.

33. Sipho Wait wait wait wait...

34. Gio How do you get this?

35. Nina Because, just remember, the Clear Vision's more expensive the fee, which you only pay once, but here the Best View the rent is more expensive, and the rent you pay every day... that's R50... the rent's four times, its like four times... ummm... R15, so you can pay, the rent you can pay here for one day you can pay for four days at Clear Vision.

Stanza 10

36. Gio ... so here you, you subtract... or what...

37. Nina No, you don't... we just say, I'm just saying if you rent the TV in Best View for one day you pay four days of rent in Clear Vision. Which, if you pay the fees in Clear Vision, you pay the fees, 150, that's will be 15 days in Best View. It's very clear.

Stanza 11

38. Gio So, there are two answers... they are two...

39. Nina Ja... and you show, you show work?

Stanza 12

40. Sipho Alright, alright…

41. Gio But here they say for what number of days, for what number...

42. Nina I used five days because you, if you rent, if you rent in the Clear Vision you save more of money, because you need rent for five days. In Clear Vision you pay R225, which if you paid for five days in the Best View you pay 315, and that means you pay for six days in...

Stanza 13

43. Sipho — Okay, so... so I'm misinterpreting to the question. I'm misinterpreting to the question... You see I…

Stanza 14

44. Gio — Problem number two was... no, but I got the same answer as you... So, but at the end I just subtracted...

45. Nina — ... where did you subtract from?

46. Gio — I took the 75, the, the 165 minus 75 to get the number, to get the...

47. Nina — ... but the equation was...

48. [Sipho and Nina chorus] what number of days...

49. Nina — ... not of one day, not of... What number of days?

50. Gio — This good now, horrible imaginations about a lot of hyenas, isn't it? [General chuckles].

Stanza 15

51. Gio — Okay, problem number three.

52. Sipho — Okay, problem number three, what did you do?

53. Nina — I took 32, coz 32 kilometres [chuckling]... and I got, I think 8 kilometres. I was just guessing... I don't know…

54. Gio — No, I did, I did one, one minute per 60 seconds, right? So I did 60 times 15 is... 900. So I took the 32 minus 24, which gave me 8, times twenty…

55. Nina — Oh, 28.

Stanza 16

56. Sipho — Oh, okay, okay, my mistake, I found my mistake. I...err... I...

57. Gio — ... you found it...

58. Sipho — Yeah, yeah...

Stanza 17

59. Gio — [Addressing Nina whilst Sipho works through his solution to Problem 3] ... then 8 times 15 which gave me 120, divided by two...

60. Nina — Then how many kilometres?

61. Gio — 60 kilometres. Okay…

62. Nina — 60 kilometres.

Stanza 18

63. Sipho — Okay. What I did is, umm totally different to what you guys did. You know, umm you take distance, distance is equals to speed divided by time...

64. Gio Speed, dis… you're talking about science here, right?

65. Sipho Ah, but still. Okay, so distance is equal to speed divided by time, so I took, umm, 32 kilometres and I plussed it with, umm 24, and then I took, umm...

Stanza 19

66. Sipho My mistake was I should have put in, I should have made 15 con..., I should have converted it.

67. Gio Yes. 15 should have been in...

68. Sipho ... 15 should have been divided, should have been... what's 15...?

69. Gio Should be times, shouldn't it?

70. Sipho 15, 15, 15... mmm... is equals to a quarter, divided by a quarter of umm 60 minutes, 60 divided by...

71. Gio So what's your answer?

72. Sipho It should be 60 divided by, err, divided by four, and then this, that divided by... err, then you would have gotten your answer there, and then you take... umm... 4, it'll be 4, 4 divided by 32 kilometres and you'll get your distance that he had to travel. I think, I'm not sure, but... I could have…

Stanza 20

73. Gio For me this problem is, mmm very difficult.

74. Nina Ja. For me the last one was worst. The first, the other ones […all talking together]... all of them you need to read more than three times to get it right. Especially problem 2 with the rent and everything, it was very like hard to do.

Stanza 21

75. Gio ... but anyway why do we have to use, have to have these questions?

76. Sipho Why, why do we have to do what?

77. Gio Why do they use this questions?

78. Sipho I, err... donno...

79. Gio I think in the future we won't use it, maybe I going to...

80. Sipho I think you going to use it... later...

81. Nina You going to be a maths teacher you going to use it...

82. Sipho Nooo...

83. Gio Of course! ... My father's a businessman, right, he just use minus, plus, times... he doesn't use, he doesn't use...

84. Nina ... the *x*, *y*... triangles, circles...

Stanza 22

85. Sipho — But I think, you know you need a formula like, umm, as a businessman you'd say, like you wanna, somebody asks you and says... err, I wanna buy an orange, let's say I wanna buy an orange, for... so much money, how much more, how much, how much money would I need if I wanna buy, let's say, 10 oranges? Then you gonna need to know...

86. Nina — ... the profit...

87. Sipho — ... yeah, yeah, you gonna need to know, umm, like err, let's say, how many, how many, how many oranges would, how much money would I need to [Nina talking at the same time]...

Stanza 23

88. Gio — So, the message we need here is plus, minus, times and divided. Okay.

89. Sipho — So we'd been, they making it difficult for us...

Stanza 24

90. Nina — I know what's wrong, you're saying in our township we would do better than here... because of the language, we have to think about the language. I'm telling you, if, when I was in Brazil my maths were, my maths mark was much higher than here in South Africa...

91. Gio — And also me is the same... is the same.

92. Nina — ... the same. When I was in standard five [Grade 7] I had 70%... for maths.

93. Gio — Now for me the same, because I... even South Africa I got more what I used to get...

94. Nina — I got higher marks in Brazil…

95. Sipho — Yes. Let's go call him, uh?