2001 NOTES ON MEMORANDUM

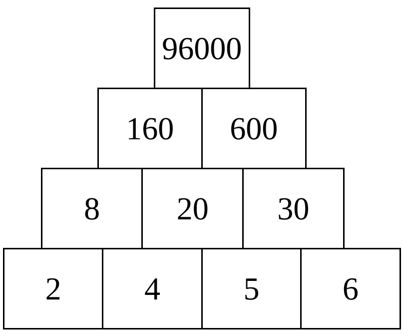
These notes are necessarily brief and often formal and symbolic.

<u>GRADE 4(1)</u>

3. Equal groups, so $629 \div 37 = 17$
5. $6 \times R0,75 - 2 \times R2$
6. 08:00 – 70 min $\rightarrow$ 06:50
7. Jan, Feb, March: $31 + 28 + 31 = 90$ days, so the 100^{th} day is on 10 April
8. 18×10
9. Make *equal parts*, e.g. 16 triangles, then 8/16 triangles = 1/2 is shaded. Or 8 squares with 1/2 of each square shaded, so 1/2 of whole is shaded.
10. 6 small ones and 2 big ones for a total of 8.
11. 6×10 or 10×6
12. Make a sketch: **A … 15 …Stall …… ? ……..B** $15 + ? = 75$
13. 11 (*you* and 10 others!) $- 3 + 1 - 5 + 3 - 6 = 1$
14. Make a systematic list: $1 + 1 = 2$; $1 + 2 = 3$; ...; $6 + 6 = 12$
    Possible totals are 2; 3; 4; ….; 11; 12, i.e. 11 different possible answers.
16. Check each answer, e.g. $9 = 3 \times 3$; $11 = 2 \times 3 + 5$; $13 = 2 \times 5 + 3$, etc. You know, or you learn from these calculations, that the sum of three odd numbers is odd, so 12 is not possible!
17. The 1^{st} and 4^{th} and 2^{nd} and 3^{rd} rows/columns are left-right/top-down reverses . . .
19. $(71 + 24) + 71\ (71 - 24) = 3 \times 71 = 213$
20. Check answers systematically, e.g. $80 = 50 + 20 + 10$; $32 = 20 + 10 + 2$; $62 = 50 + 10 + 2$; etc.
21. Imagine yourself positioned to the left behind the building and describe what you see …
22. 4:8 = 1:2. Share R30 into 3 equal parts, i.e. R10 each, then Thabo pays 1 part.
    Or: One bottle costs $R30 \div 12 = R2,50$, so 4 bottles cost $4 \times R2,50 = R10$
23. Continue pattern of subtracting 4 cm/hour. Or the formula is Height = $32 - 2 \times$ time
24. Sipho saves R1,50 + 75c per week, i.e. 75c/week more than Thembo, i.e. 12×75c more in 12 weeks
25. With 3 apples she can make 2 tarts, so with 15 (5×3) apples she can make 5×2 apples

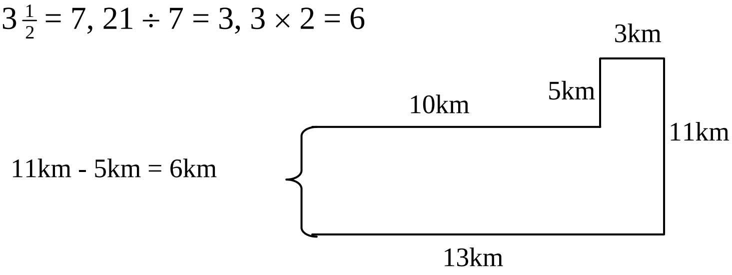
<u>GRADE 4(F)</u>

2. $96 - 64 = 32$, $32 \div 2 = 16$, $64 + 16 = 80$
3. $0,99 + 0,02 = 1,01$
4. 49; 36; 25 - square numbers in reverse order
5. $72 \div 3 = 24$, $24 \times 12 = R2,88$
6. 9:15 + 60 min = 10:15, 10:15 + 50 min = 11:05
7. The next multiple of 7 will be 105 - so they need 3 more marbles
9. Ferdinand got the most, Margaret got second most and Leigh got third most.
10.



11. Alan will step on 1, 2, 3, 4, 5 and 6. Brenda will step on 2, 4 and 6. Carly will step on 3 and 6.

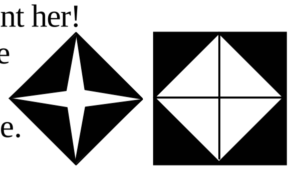
12. From 13:00 to 10:00 the next day is 21 hours. 21 hours $\times$ 3 minutes = 63 minutes. 10:00 - 63 minutes = 8:57
13. The bell at school B will ring at 8:00, 8:35, 9:10, 9:45, 10:20, 10:55 and 11:30.
14. $96 \div 3 = 32$
16. 3 + 8 + 3 + 8
17. $3\frac{1}{2} + 3\frac{1}{2} = 7$, $21 \div 7 = 3$, $3 \times 2 = 6$
18.



19. The 1st, 10th and 11th of January, October and November
20. 6 and 4 is even, 6 is bigger than 4, 4 is not a multiple of 3, 6 + 4 is a multiple of 10
21. 10 + 10 + 8 + 8
22. One should know that if the numerators are the same, the bigger the denominator, the smaller the fraction, e.g. $\frac{1}{2} > \frac{1}{3} > \frac{1}{4} > \frac{1}{5} > \frac{1}{6} > \ldots$ So it cannot be $\frac{1}{3}$ (A) or $\frac{1}{6}$ (D).
    One should know that if the denominators are the same, the bigger the numerator, the bigger the fraction. So form equivalent fractions and compare:
    Write $\frac{1}{4}$ and $\frac{1}{5}$ as 20ths: $\frac{3}{20} < \frac{4}{20} < \frac{5}{20}$, so $\frac{3}{20}$ (C) is smaller than both.
    Write $\frac{1}{4}$ and $\frac{1}{5}$ as 100ths: $\frac{19}{100} < \frac{20}{100} < \frac{25}{100}$, so $\frac{19}{100}$ (E) is smaller than both.
    Write $\frac{1}{4}$ and $\frac{1}{5}$ as 40ths: $\frac{8}{40} < \frac{9}{40} < \frac{10}{40}$, so the answer is $\frac{9}{20}$ (B).
23. For 6 milktarts she needs 8 cups of milk, so for 8 ($6 + 2 = 6 + \frac{1}{3}$ of 6) milktarts she needs $8 + \frac{1}{3}$ of $8 = 8 + \frac{1}{3}$ of $(6 + 2) = 8 + \frac{1}{3}$ of $6 + \frac{1}{3}$ of $2 = 8 + 2 + \frac{2}{3} = 10\frac{2}{3}$ cups of milk.
24. With 15 eggs you can make the recipe $1\frac{2}{3}$ times. $6 \times 1\frac{2}{3} = 10$ milktarts
25. $20 \times 20 = 400$

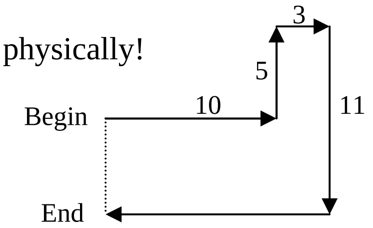
GRADE 5(1)

2. (234469 + 234562)/2
4. Try and test each possible answer!
5. Measure how many baskets fit into the tree. It is about 6, so the tree measures about $6 \times 0{,}05$ m = 3 m
6. Test each of the given answers …
   Or, find a (Susie's marbles) and b (Sam's) through trial and check so that $a + b = 105$ and $b - a = 25$
   Or, if Sam has b marbles, $(b - 25) + b = 105$, so $2 \times b - 25 = 105$, so $b = (105 + 25)/2$
   Or, to do *equal* sharing, lend 25 marbles to Susie. Then, together they have 105 + 25 = 130, so they each have $130 \div 2 = 65$. Now Susie must give back the extra 25 marbles we lent her!
7. Fold the black triangles into the white square … they will fit exactly. So the black and white areas are equal, so the black area is 1/2 of the whole.
   Or, if you see 4 squares, them 1/2 of each square is shaded, i.e. 1/2 of whole.
   Or, cut the figure into equal triangles, then 4/8 = 1/2 triangles are shaded.



8. 08:30 – 35 min $\rightarrow$ 07:55

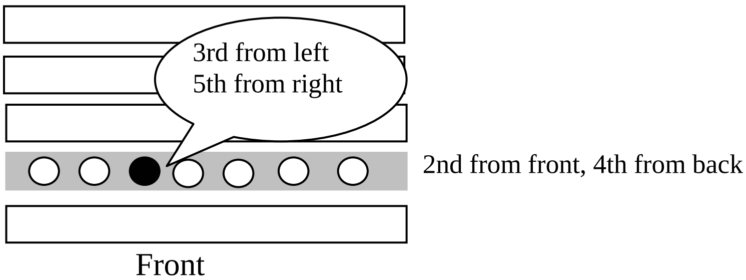
9. Draw it physically!



10. Test all the given answers, e.g. 6 = 5 + 1; 10 = 7 + 2 + 1; 24 = 12 + 7 + 5; etc.
11. Continue the pattern of adding 5.
    Or, the formula is Output = 5 $\times$ Input + 2, so Output (6) = 5 $\times$ 6 + 2
12. Start numbering (painting) the sides …
13. Rotate the figures to the same position …
14. In 90 (= 80 + 10) minutes she walks $(4 \times \frac{2}{3}) + (\frac{1}{2} \text{ of } \frac{2}{3}) = \frac{8}{3} + \frac{1}{3} = \frac{9}{3} = 3$ km
15. If C pupils like chocolate, then 4 + 2 $\times$ C = 40, so C = (40 – 4)/2
16. You pay $\frac{9}{10}$ of R215 = (R215 $\div$10) $\times$ 9 = R21,50 $\times$ 9
17. If Ferdi's starting number is S, then he did S $\times$ 10 = 600. So S = 60. So correct answer is 60 $\div$ 10 = 6
18. Peter worked 3 out of the 6 hours, so he should get 3/6 = 1/2 of R48 = R24
19. Make a systematic list of all the possibilities: 32; 34; 31 | 23; 24; 21 | 43; 42; 41 | 13; 12; 14
20. They drink $\frac{1}{2} + (\frac{1}{3} \text{ of } \frac{1}{2}) = \frac{1}{2} + \frac{1}{6} = \frac{2}{3}$ of the milk, so $\frac{1}{3}$ of the milk is left
21. If their ages are a, b and c, then $(a + 10) + (b + 10) + (c + 10) = 100$, so $a + b + c = 70$
22. The numbers are one more than a multiple of 4 – check each of the given answers …
    Or the generating formula is $4n + 1$, check if $4n + 1 = 6152$ gives a whole number solution, etc.
23. The 71th multiple of 4 plus 1 = 71 $\times$ 4 + 1 = 285
24. List them systematically: 997; 988; 979 898; 889 799
25. Look at Togs: 2 + 1 + 3 = 6, so 2 Togs are carried from Pues. Look at Pues: 4 + 5 + 4 = 13
    So 13 Pues is 2 Togs and 1 Pues. So 13 = 2 $\times$ 6 + 1, so there are 6 Pues in a Tog

<u>GRADE 5(F)</u>

2. 6,8 $\div$ 2 = 3,4, 3,4 $\div$ 2 = 1,7, 1,7 $\div$ 2 = 0,85
3. $(3x + 8) \div 2 - 6 = x$
   $(3x + 8) \div 2 = x + 6$
   $3x + 8 = 2(x + 6)$
   $3x - 2x = 12 - 8$
   $x = 4$
4. Must be a multiple of 6. 4182 is the only multiple of 6
5. Half of the flowers is South African - therefore half of 72 is 36. Of the 36 flowers two thirds are roses - therefore 36 $\div$ 3 $\times$2 = 24.
6. You do not know whether some of John's friends are also some of Mary's friends.
7. $\underbrace{2-1}_{1\times1} + \underbrace{3-2}_{1\times2} + \underbrace{4-3}_{1\times3} + \underbrace{5-4}_{1\times4} + \underbrace{6-5}_{1\times5} + ... + \underbrace{101-100}_{1\times100}$
9.



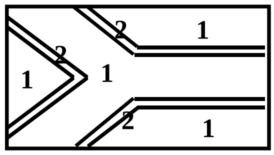
Therefore 5 rows with 7 students in a row = 35 students

10. If there are 12 red beads, there will be 30 green ones ($12 \div 2 = 6$ and $6 \times 5 = 30$)
    If there are 30 green beads there will be 9 purple ones. ($30 \div 10 = 3$ and $3 \times 3 = 9$)
11. The 7 cookies that was left was one less than the children. There was therefore 8 children who each got 6 cookies (48 cookies) plus the 7 left over cookies ($48 + 7 = 55$ cookies)
12. Because the number is uneven it cannot end on the 2, but can end on any of the other numbers.
    Beginning with 2, there will be six combinations:
    2359, 2395, 2539, 2593, 2935, 2953
    Beginning with 3 there will only be 4 possible combinations:
    3259, 3295, 3529, ~~3592~~, ~~3952,~~ 3925 (the ones ending in 2 is not possible)
    Beginning with 5 and 9 there will also be only 4 possible combinations each time.
    Therefore $3 \times 4 = 12$, $12 + 6 = 18$
13. One quarter of the sales were 60 strawberry ice creams. $60 \times 3 =$ 180 will be the rest of the ice cream. $180 \div 2 = 90$, therefore 90 chocolate and 90 vanilla.
14. If you look directly from behind the tower of the building will be on your left hand side.
15. To tape the top of the box she will need 420 mm + 230 mm + 420 mm + 230 mm = 1,300m
    To tape the bottom of the box she will need the same as for the top - 1,300m
    To tape the 4 sides she will need 270 mm $\times$ 4 = 1,080m
    All together it will be 1,300 m + 1,300 m + 1,080 m = 3,680 m
16. Around the box from the one way will be: 420 mm + 270 mm + 420 mm + 270 mm = 1,380 m
    Around the box from the other way will be: 230 mm + 270 mm + 230 mm + 270 mm = 1 m
    Plus the bow: 1,380 m + 1 m + 40 cm = 1,380 m + 1,000 m + 0,400 m = 2,780 m
17. $\frac{4}{8}$ of the tank is therefore = 25 litres. $\frac{8}{8} = 25 \times 2 = 50$ litres
18. $50 \times 3 = 150$
19. $\frac{1}{5} = \frac{7}{35}$ and $\frac{1}{7} = \frac{5}{35} \rightarrow \frac{6}{35}$ is halfway between $\frac{7}{35}$ and $\frac{5}{35}$.
20. The tree grows with 1,5 cm every day. In 30 days it will grow $30 \times 1,5 = 45$ cm. But Sara started measuring when the tree was 12 cm tall - 12 cm + 45 cm = 57 cm.
21. The following 4-digit numbers are possible: 4000, 3001, 3010, 3100, 2002, 2020, 2200, 2110, 2011, 2101, 1300, 1030, 1003, 1210, 1021, 1012, 1120, 1201, 1102, 1111.
22. Although (A) also gives an answer of $\frac{7}{9}$, the fractions are not written as a **sum** of unit fractions.

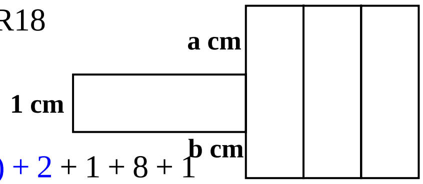
    The answer is therefore (D), because it is the only answer that adds up to $\frac{7}{9}$.
23. 8 pencils will then cost R48,85 - R36,05 = R12,80. One pencil will cost R12,80 $\div$ 8 = R1,60. 16 pencils will cost 16 $\times$ R1,60 = R25,60. But Jerry paid R36,05 for 16 pencils and a pen. So the pen costs R36,05 - R25,60 = R10,45.
24. This can be done by trail and error. For e.g. If we look at what Michael bought: 2 chocolates + 2 gums = R12. If a chocolate costs R4, 2 gums will cost R12 - R8 = R4. So one gum will be R2. If we substitute that into what Vusi bought, we find that 2 juices would cost R10 - R4 = R6, So one juice will be R3. If we substitute everything we know by now into what Thandi bought, it must work out, otherwise we will have to try something else to start off with. Thandi: R4 + R2 + R3 = R9. It works, so therefore a chocolate cost R4.
25. We can also write this as: $\frac{2000!}{2000!} \times \frac{2001!}{1999!}$. We know that $\frac{2000!}{2000!} = 1$, So now we are left with $1 \times \frac{2001!}{1999!}$. $\frac{2001!}{1999!}$ can however also be written as $\frac{2001 \times 2000 \times 1999!}{1999!}$. We know that $\frac{1999!}{1999!} = 1$, So now we are left with $1 \times 1 \times 2000 \times 2001 = 4002000$

GRADE 6(1)

1. To compare, form equivalent fractions (1000 ths).
   Or convert all the fractions to decimals …
2. Try trial and error, e.g. 8 + 9 + 10 + …
   Or test each of the given numbers …
   Or, if the smallest is x, then $x + (x + 1) + (x + 2) + \ldots + (x + 6) = 7 \times x + 21 = 63$, so $x = 6$
3. 9 small cubes fit onto the bottom, then there are 3 such layers, so $9 \times 3 = 27$
4. The pattern is $\div 6$; $\div 7$; $\div 8$; $\div 9$; …
5. $\frac{13}{20}$ is more than $\frac{12}{20}$ ($\frac{3}{5}$) and less than $\frac{16}{20}$ ($\frac{4}{5}$), so he is on side DE
6. He still has $\frac{7}{20}$ of the distance to go, so $\frac{7}{20}$ of 25 cm = (25 cm $\div$ 20) $\times$ 7 = 8,75 cm
7. Start numbering (colouring) the regions, e.g. as shown …



8. Make equal parts …
   Or imagine folding the four corners to the inside … (See Grade 5, no 7)
11. Trial and improvement, or check the given numbers …
12. R90 is 5 parts, so 1 part is R90 $\div$ 5 = R18, so RED collected 3 $\times$ R18
13. Although we do not know the length of a or b, we know that a + b = 2 …



14. 4 books = 2 books + 6 kg, so 2 books = 6 kg, so 1 book = 3 kg
15. The pattern is 1 + 1 + 1 + 2 + 1 + 3 + 1 + **4 + 1 + (5 + 1 + 6 + 1 + 5)** + 2 + 1 + 8 + 1
16. Make a systematic list, e.g. 3579; 3597 | 3759; 3795 | 3957; 3975 | 9375; 9357 | 9537 …
17. Check all cases and note behaviour: 1 $\times$ 17 =17; 2 $\times$ 16 = 32; 3 $\times$ 15 = 45; 4 $\times$ 14 = 56; etc.
18. Continue both patterns … Or: 17 + 5 $\times$ 7 = 17 + 35 = 52
19. Length = 12 + 2 $\times$ Mass, so Length (15) = 12 + 2 $\times$ 15 = 42
20. The first three may be blue, red and brown. Then the next one must match one of these colours
21. You can maybe take out, e.g. 10 red, then 10 brown, then 1 blue, then the next one is also blue
22. Make a systematic list, e.g. 11; 13; 15; 17; 19 | 31; 33; 35; 37; 39 | 51; 53; 55; 57; 59 | etc.
23. Generate special cases and organise the data systematically, e.g. in a table, and find patterns:

Row	1	2	3	4	5	6
# triangles	1	3	5	7	9	11

   Use the pattern, e.g. # triangles = 2 $\times$ Row – 1
   So in Row 50 there are 2 $\times$ 50 – 1 triangles
24. Generate special cases and organise the data systematically, e.g. in a table and find patterns:

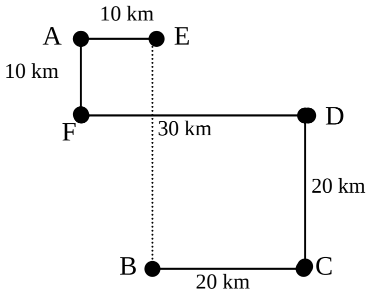
# rows	1	2	3	4	5	6
# triangles	1	4	9	16	25	36

   Use the pattern, e.g. # triangles = 50 $\times$ 50 = 2500
25. According to question 24 there are 2500 triangles, so the number in the last triangle is 2500!

GRADE 6(F)

1. 5,6 + 5,65 = 11,25 and 11,25 $\div$ 2 = 5,625
2. For every following year 31 October will fall on the following day, except for 2004 and 2008 (leap years) when it will skip two days. E.g. In 2002 31 October will be on a Thursday, on 2003 it will be on a Friday, but in 2004 it will be on a Saturday etc.
3. 3(width) - 3 = width +3, therefore 2(width) = 6, width = 3, but the table is 3 times longer than it is wide, so 3 $\times$ 3 = 9
5. From the ground, over the length, to the ground again will be: 6 m + 8 m + 6 m = 20 m and from the ground, over the width, to the ground again will be: 6 m + 10 m + 6 m = 22 m.
6. $\frac{8}{11} - \frac{5}{8} = \frac{64}{88} - \frac{55}{88} = \frac{9}{88}$ and $\frac{9}{88}$ = 135 litre, so $\frac{1}{88}$ = 15 litre and $\frac{88}{88}$ = 1320 litre.

7. Every two days the plant grew 3 cm, so in one day it grew 1,5 cm. In ten days it grew 15 cm. In eleven days it therefore grew 15 cm + 1,5 cm which is equal to 16,5 cm.
8. The plant grew 1,5 cm every day, so 60 ÷ 1,5 = 40 days.
9. If you use all the information that you have you can construct a sketch, from which it can clearly be seen that B is 30 km away from E.



10. From 1 to 69 he will need 7 sevens. From 70 to 79 he will need 11 sevens and from 80 to 100 he will need 2 sevens. That equals to 20 sevens.
11. $3 \times 3 - 3 + 3 = 9 - 3 + 3 = 9 \neq 3$
12. Every 100 years they will grow 8 mm closer to one another. They have to grow 15 000 mm altogether. Therefore 15 000 mm ÷ 8 mm = 1 875. But it takes a hundred years to grow 8 mm, so 1 875 × 100 = 187 500 years.
13. With every two cups she can bake 5 milk tarts. So for 6 cups she can bake 15 milk tarts and she will be left with $1\frac{1}{2}$ cups of sugar, which is $7\frac{1}{2}$ fifths. $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5}$. So she can bake 15 + 3 = 18 milk tarts and she will be left with $1\frac{1}{2}$ fifths or $\frac{3}{10}$ of a cup of sugar.
15. 35 learners – 6 learners (the ones without pets) = 29 learners. Of the 29 learners 24 learners have cats. That leaves 5 learners who do not have cats, but who do have dogs. But 18 learners have dogs, 5 of which who do not have cats, so 13 learners have dogs and cats.
16. $4 \times 1\frac{1}{2} = 6$, therefore $6 \times 1\frac{1}{2} = 9$ cm
17. For every 5 kg on Earth a person weighs 0,83 kg on the moon. We already know that 30 kg on Earth weighs 4,98 kg on the moon, so we need to add another 10 kg (2 × 5) to get 40 kg. 4,98 kg + 0,83 kg + 0,83 kg = 6,64 kg.
18. 85 kg ÷ 5 = 17 and 17 × 0,83 = 14,11 kg.
19. 19 can be made up of: 1 tricycle and 8 bicycles → total of 9 (too much)
    3 tricycles and 10 bicycles → total of 13 (too much)
    5 tricycles and 2 bicycles → total of 7 (just right)
20. 1 Δ = 6 □ and 1 Δ + 1☺ = 10 □. Therefore 1☺ = 4 □ and 2 ☺ = 8 □.
22. S + L = R18 → L = R18 –S …..①
    L + C = R21→ L = R21 – C …..②
    S + C = R23 → C = R23 – S …..③
    ∴R18 – S = R21 – C …..① in ②
    R18 – S = R21 – C
    R18 – R21 = S – C …..④
    R18 – R21 = S – (R23 –S) …..③ in ④
    R18 – R21 + R23 = 2S
    2S = R20
    S = R10 …..⑤
    R18 – R21 = (R10) – C …..⑤ in ④
    R18 – R21 – R10 = – C
    C = R13 …..⑥

L = R21 – (R13) …..⑥ in ②
L = R8
Steven has R10, Cathy has R13 and Lara has R8 – together they have R31.

24. $\frac{2000+1999}{2000-1999} = \frac{3999}{1} = 3999$

25. $1 + 2 \rightarrow 3 + 3 \rightarrow 6 + 4 \rightarrow 10 + 5 \rightarrow 15 + 6 \rightarrow 21 + 7 \rightarrow 28 + 8 \rightarrow 36 \ldots 190 + 20 \rightarrow 210$

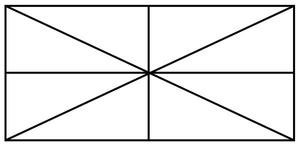
GRADE 7(1)

3. The pattern is that 80/100 = 240/300 = 80%. So 80% of R700 = R560
4. Divide 420 into 7 equal parts:420 ÷ 7 = 60. 3 of these parts are dresses, i.e. 3 × 60 = 180
5. Use the structure, e.g. 12 × 2 cm above, 13 × 2 cm below, plus 2 cm left and 2 cm right
6. These numbers are cubes: 6^3 ; 5^3 ; 4^3 ; 3^3 ; …
7. 1/3 of 2/3 = 2/9
8. $\frac{8}{11} - \frac{5}{8} = \frac{9}{88}$ of tank is 135 ℓ. So $\frac{1}{88}$ of tank = 135 ℓ ÷9 = 15 ℓ. So the full tank =15 ℓ × 88
9. Find a pattern in 3; 9; 15; … Or: the last column is multiples of 6, so last number in row 81 is 81 × 6 - 486. So third number in row 81 is 486 – 3 = 483
10. If she is now x years old, then in 3 years $x + 3 = 3(x - 3)$, so $x = 6$
11. Use fact that the area of a triangle is half of area of a rectangle …
12. $T_n = 3 \times n + 1$
13. $X_n = 4 \times n + 1$
14. Petrol used for 325 (i.e. 3 × 100 + 25) km = 3 × 7,6 ℓ+ 7,6 ℓ÷4 = 24,7 ℓ. So petrol left = 45 ℓ – 24,7 ℓ
15. If the original price is Rx, then final new price is 1,30 × (1,10 × Rx) = 1,32 × Rx, i.e. 32% more …
16. The number at back of front dice is 2 and on back dice is 3 or 4.
17. Make a systematic list: For Jan: 31 ÷ 1, 30 ÷ 1, etc – 31 days; … For Nov: 22 ÷ 11, 11 ÷ 11; etc.
18. The smallest is 10 × 10 = 100, the largest, by try and test is 31 × 31 = 961. Count them!
19. Trial and improvement …
21. If the youngest sister has Rx, then we can represent the situation symbolically by:
    $x + (x + 2) + (x + 4) + (x + 6) + (x + 8) = 100$, so $5 \times x + 20 = 100$
    Or think of it like this: to make an equal sharing situation, first take away the extra money they get (2 + 4 + 6 + 8 = R20). Then there is R80 to be shared equally between the 5 sisters – each receives R16. The give them the R2, R4, etc. that they get more than the younger sister.
22. If there are x learners in class, then $3 \times x + 31 = 4 \times x + 8$, so $x = 23$, so …
    Or: After giving each learner 3 pages the teacher has 31 pages left. If she now gives every learner a 4th page, she has 8 left, which means she handed out 31 – 8 = 23 papers, so there are 23 learners in the class …
23. $x_1 + x_2 + \ldots + x_7 = 7 \times 49$
    $\therefore$ $(x_1 + 1) + (x_2 + 2) + \ldots + (x_7 + 7) = (x_1 + x_2 + \ldots + x_7) + (1 + 2 + \ldots + 7) = 7 \times 49 + 4 \times 7$
    To get the new average, divide by 7: (7 × 49 + 4 × 7)/7 = 49 + 4
25. When meeting, the distances travelled by A and B are equal.
    Distance = speed × time, so if B travels t hours, then $70t = 50(t + 2)$
    Or: In the 2 hours start that A has, it will cover 50 km/h × 2 h = 100 km. Bus B must now cover this 100 km difference in distance at a (70 – 50) km/h difference in speed. So, at 20 km/h faster, B will cover the extra 100 km in 5 hours.

GRADE 7(F)

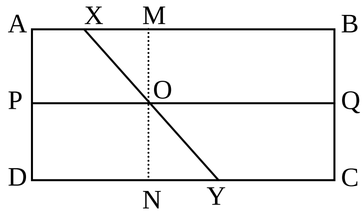
1. The bungee cord is 40 m long. 95% of 40 = 38 m. He will therefore bounce back 2 m from the ground. (40 m + 38 m = 78 m).
2. $4 + 4 - 4 \div 4 = 4 + 4 - 1 = 8 - 1 \neq 1$

3. $\frac{2}{8}$ or $\frac{1}{4}$



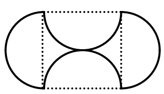
4. $\frac{3}{8}$

5. For the explanation we name the rectangle ABCD with the line PQ dividing the rectangle in two equal pieces and line XY crossing line PQ at O.



We know that area OQCY and area YDPO are equal (OP = YC – given and PD = CQ - given).
Therefore the area of OQCY will be a half of the rectangle PQCD.
The area of rectangle PQCD = 2 cm × 8 cm = 16 cm^2.
Half of 16 cm^2 = 8 cm^2 = area of OQCY.
To work out the area of APOX, we drop the line MN so that triangle OMX ≡ ONY.
We know NY = 2 cm (5 cm – 3 cm) and NO = 2 cm (given).
Area of ONY = $\frac{1}{2}(2) \times 2 = 2$ cm^2. This is also equal to area of OMX (OMX ≡ ONY)
Area of AMOP = 3 cm × 2 cm = 6 cm^2.
Area of AXOP = Area of AMOP – area of OMX = 6 cm^2 – 2 cm^2 = 4 cm^2.
The shaded area = area of AXOP + area of OQCY = 8 cm^2 + 4 cm^2 = 12 cm^2.

6. 20, 22, 24, 26, 28, 40, 42, 44, 46, 48, 60, 62, 64, 66, 68, 80, 82, 84, 86, 88.
7. $\sqrt{702}$ = 26,495… therefore 26 × 27 = 702 and 26 + 27 = 53
8. Take for e.g. a 2 × 2 × 2 room. To paint each of the wall he will paint an area of 2 × 2 as well as another 2 × 2 area for the roof, therefore 5(2 × 2) = 20. If you double all the measurements it will be 5(4 × 4) = 80. 80 is four times more than 20. So it will take him four times longer to paint the bigger room. If it took him 2 days to paint the smaller room, it will take him 8 days to paint the bigger room.
10. Take for e.g. school fees of R100. 10% of R100 = 10 and 20% of R110 is R22. So school fees went up with R32 from the original R100 which is 32%.
12. Looking right from the top: 5 cm^2. Right from the bottom: 5 cm^2. Right from the front: 4 cm^2. Right from the back: 4 cm^2. From the right: 4 cm^2. And from the left: 4 cm^2.
4 cm^2 + 4 cm^2 + 4 cm^2 +4 cm^2 + 5 cm^2 + 5 cm^2 = 26 cm^2.
13. If her average for the first 4 tests was 67%, we can also express it as (67 + 67 + 67 + 67) ÷ 4. So 67 + 67 + 67 + 67 + 63 + 67 = 398. 398 ÷ 6 = 66,33.
14. The area of the semi-circles on the left and right side is equal to the area of a full circle.
$\Pi r^2 = \Pi 3^2$ = 28,27433… cm^2…①
The area of the square (see the sketch below) is 6 × 6 = 36 cm^2. But we need the area of the square minus the area of the 2 semi-circles: 36 cm^2 – 28,27433 cm^2 = 7,725666… cm^2…②
① + ② = 28,27433 + 7,725666 = 36 cm^2.



16. R9,46 = 114%, so R9,46 ÷ 114 × 14 = R1,16
17. $\frac{1}{13} < \frac{5}{61} < \frac{1}{12}$ and $\frac{1}{5} < \frac{13}{57} < \frac{1}{4}$, therefore 12, 11, 10, 9, 8, 7, 6 and 5.
18. In four years time Sandy will be 7 and Mandy will be 14. At this moment Sandy is 3 years old and Mandy is 10 years old. 3 + 10 = 13.

20. 26 letters in the alphabet. Each letter can go together with itself and all the other letters. $26 \times 26 = 676$
21. $d = 2{,}4 – 0{,}05 \times t = 2{,}4 – 0{,}05 \times 22 = 2{,}4 – 1{,}1 = 1{,}3$ cm
22. Interpret the formula $d = 2{,}4 – 0{,}05 \times t$ in the physical situation: It means that at a temperature of 0°C the gap is 2,4 cm. Then as the temperature increases, the gap becomes smaller, corresponding to our knowledge of science that heat causes expansion …

    Our science knowledge also tells us that if the temperature *decreases*, the length of metal will decrease, which means the size of the gap becomes *bigger!* To make the size of the gap bigger, we will have to add!

    Logically, we can deduce that in $2{,}4 – 0{,}05 \times 22$ we are *subtracting*, so probably in $2{,}4 – 0{,}05 \times (-2)$ we will have to add

Temp (°C)	0	1	2	3	4	5
Gap (cm)	2,4	2,35	2,30	2,25	2,20	2,15

23. Let C be the cost of a coke and D the cost of a packet of chips. The cost of the first buy is 6C + 7D and of the second is 8C + 4D: So you bought 2 Cokes more, but 3 chips less, so 2 Cokes cost just as much as 3 packets of chips (compare the sentence 6C + 7D = 8C + 4D). So instead of 8C + 4D = 4 × 2C + 4D = 4 × 3D + 4D = 12D + 4D = 16D.
24. If he eats x bananas in the last hour, then $(x + 15) + (x + 10) + (x + 5) + x = 90$
    So $4 \times x + 30 = 90$, so $4 \times x = 60$, so $x = 1$
25. The pattern simply is that the answer is the remainder after dividing by 8. So $6 \times 7 = 2$.
    Another view: On our 12 hour clock, $6 + 7 = 1$. Similarly this question does calculations on "an 8 hour clock".