



MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga

GloSS

INTERVIEW 1



Copyright © Crown 2012. All rights reserved.

Note: Teachers may copy this form for educational purposes.
This form is available on the nzmaths website, at:
<http://nzmaths.co.nz/gloss-forms>



Instructions

- Commence the interview with the section targeted just below the Number Framework stage you think the student is at. Be willing to move on quickly, or even jump some sections if this level is too low. However, if the student finds the first section they are given too hard, go back to a previous section that they can answer.
- Ask the student **all** the tasks within a section. Generally these are three tasks on two face-to-face pages.
- Read each task to the student and show them the related Task Card.
- Give the student time to answer the question (you may need to wait for a few minutes).
- Prompt the student if you need to. For example, ask “*How did you work that out?*” or “*Can you talk me through what you were thinking?*” Do not ask these questions if the student answers quickly and it is obvious that they “just knew” it.
- Allow the student the opportunity to demonstrate **higher level strategies**. If they use a simple strategy (e.g., counting) ask “*Can you do it another way?*”
- Use the scoring guide below each task to determine the Number Framework Stage associated with the student’s response.
- Circle the relevant stage on the recording sheet.
- Record their strategy in the space under “Observations”.
- Use the decision rule provided at the end of each section to decide whether to continue the interview. If there is any doubt or if you think the student may be capable of showing higher strategies, **continue** the interview.
- Questions are designed so that they can be answered mentally.

MATERIALS NEEDED

- 20 counters.
- Two A5 sized cards to cover counters and isolate tasks.
- Set of Task Cards.
- One recording sheet per student.

INTERVIEW SCHEDULE



Section 1 TARGET: Stage 1 One-to-one counting

TASK 1

ACTION: Place 8 counters of the same colour on the table.

SAY: How many counters are there?

Stage	Strategy observed
0	Student cannot count 8 objects
1	Correctly counts the 8 objects

DECISION: If “1” is circled in **Task 1**, CONTINUE the interview.
If “0” is circled, rate the student at Stage 0 and STOP the interview.



Section 2 TARGET: Stages 2–3 or 4 Counting from one or Advanced counting

TASK 2

INTERVIEW 1 TASK 2

$$3 + 6 = \square$$

SAY: Please hold out your hands for me.

SAY: Here are 3 counters.

SAY: Here are another 6 counters.

SAY: How many counters have you got altogether?

ACTION: Place 3 counters in the student's hand.

ACTION: Place 6 counters in their other hand.

ACTION: Close the student's hands to encourage imaging.

ACTION: Allow the student to open their hands if they find imaging difficult.

Stage	Strategy observed
1	Cannot solve the addition problem (Stage 1)
2–3	Physically counts all the objects from 1 on materials (Stage 2) Correctly counts all the items from 1 by imaging (Stage 3)
4 or higher	Counts on e.g., 4, 5, 6, 7, 8, 9 or 7, 8, 9 Knows $3 + 6$

DECISION: If either “2–3” or “4” are circled in Task 2, CONTINUE the interview.
If “1” is circled, STOP the interview. If in any doubt, CONTINUE the interview.



Section 3 TARGET: Stages 4 or Early 5

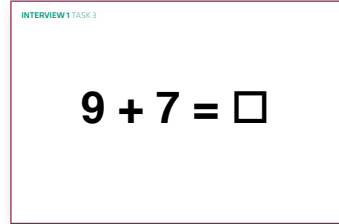
Advanced counting or Early additive part-whole

Do all **three** tasks on these two pages.

TASK 3

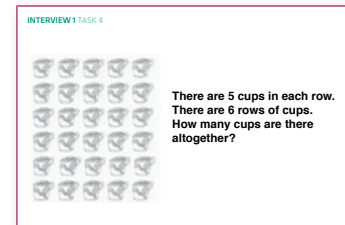
ACTION: Place 9 counters under a card then place 7 under another card.

SAY: Here are 9 counters, and here are 7 counters.
How many counters are there altogether?



Stage	Strategy observed
3	<p>Cannot solve the problem (After removing the cards–Stage 1)</p> <p>Counts all objects from 1 on materials (Stage 2) e.g., 1, 2, 3, ..., 16</p> <p>Counts all objects from 1 by imaging (Stage 3) e.g., 1, 2, 3, ..., 16</p>
4	<p>Counts on (Stage 4) e.g., 10, 11, 12, ..., 15, 16 or 8, 9, 10, ..., 15, 16</p>
Early 5 or higher	<p>Uses a part-whole strategy e.g.,</p> <ul style="list-style-type: none"> - Making to ten e.g., $9 + 1 = 10$; $10 + 6 = 16$ - Doubling with compensation e.g., $7 + 7 = 14$; $14 + 2 = 16$ or $8 + 8 = 16$ or $9 + 9 = 18$; $18 - 2 = 16$ - Addition fact e.g., $9 + 7 = 16$

TASK 4



SAY: There are 5 cups in each row.

SAY: There are 6 rows of cups.

SAY: How many cups are there altogether?

ACTION: Sweep one row with your finger.

ACTION: Point to each row one by one.

Stage	Strategy observed
3	<p>Cannot solve the problem</p> <p>Counts all objects from 1 on materials (Stage 2) e.g., 1, 2, 3, 4, 5, 6, ..., 30</p> <p>Counts all objects from 1 by imaging (Stage 3) e.g., 1, 2, 3, 4, 5, 6, ..., 30</p>
4	<p>Skip counting (Stage 4) e.g., 5, 10, 15, 20, 25, 30 [or 6, 12, 18, 24, 30]</p>
Early 5 or higher	<p>Uses an additive or multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Repeat addition e.g., $5 + 5 + 5 + 5 + 5 + 5 = 30$ or $5 + 5 = 10$; $10 + 5 = 15$; ...; $25 + 5 = 30$ - Multiplication strategies e.g., $4 \times 5 = 20$; $20 + 5 + 5 = 30$ - Multiplication fact e.g., $6 \times 5 = 30$

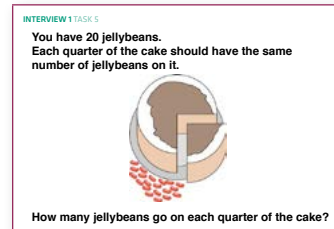
TASK 5

ACTION: Provide 20 counters (jellybeans).
Allow the student access to these counters if necessary.

SAY: You have 20 jellybeans.
Each quarter of the cake should have the same number of jellybeans on it.

How many jellybeans go on each quarter of the cake?

Note: Say "fourth" instead of "quarter" if this is more familiar to your student.



Stage	Strategy observed
2–4	<p>Cannot solve the problem</p> <p>Equally shares the beans, on materials or by imaging (Stage 2–4)</p>
Early 5 or higher	<p>Uses an additive or multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Additive partitioning e.g., $10 + 10 = 20$; $(5 + 5) + (5 + 5) = 20$ - Multiplication strategy e.g., $5 \times 2 = 10$; $10 \times 2 = 20$ - Multiplication or division fact e.g., $5 \times 4 = 20$ or $20 \div 4 = 5$

DECISION: If any “E5” are circled in **Tasks 3, 4 or 5**, **or** if the “4s” are circled in **both Task 3 and Task 4**, CONTINUE the interview.

Otherwise STOP the interview. If in any doubt, CONTINUE the interview.



Section 4 TARGET: Stage 5

Early additive part-whole


Do all **three** tasks on these two pages.

TASK 6

SAY: Tamati had 57 model dinosaurs.
He gives 25 to his cousin Alice.
How many does he have left?

INTERVIEW 1 TASK 6

Tamati had 57 model dinosaurs.
He gives 25 to his cousin Alice.



How many does he have left?


Stage	Strategy observed
Early 5	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Counting on or Counting back (Stage 4) e.g., 26, 27, ..., 57 or 56, 55, ..., 25</p> <p>Skip counting in tens and ones (Stage 4) e.g., [57] 47, 37, 36, 35, 34, 33, 32</p> <p>Repeat addition in tens and ones (Stage E5) e.g., $57 - 10 = 47$; $47 - 10 = 37$; $37 - 5 = 32$ or $25 + 10 = 35$; $35 + 10 = 45$; $45 + 10 = 55$; $55 + 2 = 57$; $30 + 2 = 32$</p> <p>Mix of counting and part-whole strategies (Stage E5) e.g., $25 + 5 = 30$; $30 + 10 = 40$; $40 + 10 = 50$; 51, 52, ..., 56, 57</p>
5 or higher	<p>Uses a part-whole strategy e.g.,</p> <ul style="list-style-type: none"> - Doubling e.g., $25 + 25 = 50$; $50 + 7 = 57$; $25 + 7 = 32$ - Place value partitioning e.g., $(50 - 20) + (7 - 5) = 32$ - Subtracting in parts e.g., $57 - 20 = 37$; $37 - 5 = 32$ - Making to ten e.g., $57 - 7 = 50$; $50 - 20 = 30$; $30 + 2 = 32$

TASK 7

SAY: Malcolm has 24 pegs.
He uses 2 pegs to hang out each piece of clothing.
How many pieces of clothing can he hang out?

INTERVIEW 1 TASK 7

Malcolm has 24 pegs.
He uses 2 pegs to hang out each piece of clothing.



How many pieces of clothing can he hang out?

Stage	Strategy observed
Early 5	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Skip counting (Stage 4) e.g., 2, 4, 6, ..., 24</p> <p>Repeated addition (Stage E5) e.g., $2 + 2 + 2 + \dots + 2 = 24$</p>
5 or higher	<p>Uses an additive or multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Doubling additively e.g., $2 + 2 = 4$; $4 + 4 = 8$; $8 + 8 + 8 = 24$; $4 + 4 + 4 = 12$ - Derive from multiplication facts e.g., $10 \times 2 = 20$; $2 \times 2 = 4$; $10 + 2 = 12$ - Multiplication or division facts e.g., $12 \times 2 = 24$ or $24 \div 2 = 12$

TASK 8

SAY: Alex and his friends ate 12 slices of pizza.

Each slice was one-quarter of a pizza.

How many pizzas did they eat?

Note: Say "fourth" instead of "quarter" if this is more familiar to your student.

INTERVIEW 1 TASK 8

Alex and his friends ate 12 slices of pizza.
Each slice was one-quarter ($\frac{1}{4}$) of a pizza.



How many pizzas did they eat?

Stage	Strategy observed
Early 5	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Counting strategy (Stage E5) e.g., $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}$ (one whole), $\frac{5}{4}, \dots, \frac{11}{4}, \frac{12}{4}$ (three wholes)</p>
5 or higher	<p>Uses a proportional approach e.g.,</p> <ul style="list-style-type: none"> - Addition strategies e.g., 4 pieces is 1 pizza; $4 + 4 + 4 = 12$ so the answer is 3 - Rate strategies e.g., 4 quarters is 1 pizza, 8 quarters is 2, 12 quarters is 3 - Multiplication facts e.g., $4 \times 3 = 12$ or $12 \div 4 = 3$

DECISION: If any "5" are circled in **Tasks 6, 7 or 8**, CONTINUE the interview.
If only "E5" are circled, STOP the interview. If in any doubt, CONTINUE the interview.



Section 5 TARGET: Early Stage 6

Advanced additive part-whole


Do all **three** tasks on these two pages.

TASK 9

SAY: Jodie had some pens.
She was given another 26 pens and she now has 86 altogether.
How many pens did she have in the beginning?

INTERVIEW 1 TASK 9

Jodie had some pens.
She was given another 26 pens and she now has 86 altogether.



How many pens did she have in the beginning?

Stage	Strategy observed
5	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Skip counting in tens (Stage 4) e.g., [26] 36, 46, 56, 66, 76, 86</p> <p>Repeat addition in tens (Stage E5) e.g., $26 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 86$</p>
Early 6 or higher	<p>Uses a part-whole strategy e.g.,</p> <ul style="list-style-type: none"> - Place value partitioning e.g., $(80 - 20) + (6 - 6) = 60 + 0 = 60$ - Addition in parts (with reversibility) e.g., $26 + 60 = 86$ or $86 - 26 = 60$

TASK 10

SAY: Zac has 8 packs of drink.
Each pack has 6 cans.
How many cans is that altogether?

INTERVIEW 1 TASK 10

Zac has 8 packs of drink.
Each pack has 6 cans.



How many cans is that altogether?


Stage	Strategy observed
5	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Uses an additive strategy e.g.,</p> <ul style="list-style-type: none"> - Skip counting (Stage 4) e.g., 6, 12, 18, 24, ..., 48 [or 8, 16, 24, 32, 40, 48] - Repeated addition (Stage E5) e.g., $6 + 6 + 6 + \dots + 6$ [or $8 + 8 + 8 + \dots + 8$] - Doubling additively (Stage 5) e.g., $6 + 6 = 12$; $12 + 12 = 24$; $24 + 24 = 48$
Early 6 or higher	<p>Uses a multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Derives from multiplication facts e.g., $8 \times 5 = 40$; $40 + 8 = 48$ - Multiplication facts e.g., $8 \times 6 = 48$

TASK 11

SAY: Ruka picks 6 boxes of raspberries in 18 minutes.
How long does Ruka take to pick 3 boxes?

INTERVIEW 1 TASK 11

Ruka picks 6 boxes of raspberries in 18 minutes.



How long does Ruka take to pick 3 boxes?

Stage	Strategy observed
5	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Uses additive strategies only (Stage 5) e.g., $6 + 6 + 6 = 18$ so 3 minutes per box; $3 + 3 + 3 = 9$</p>
Early 6 or higher	<p>Uses a mix of additive and multiplicative strategies e.g., $3 \times 6 = 18$ so 3 minutes per box; $3 + 3 + 3 = 9$</p> <p>Uses multiplicative strategies e.g., $3 \times 6 = 18$ so 3 minutes per box; $3 \times 3 = 9$</p> <p>Proportional approach e.g., Equate fraction of boxes to fraction of time e.g., $\frac{3}{6} = \frac{1}{2}$; $\frac{1}{2}$ of 18 = 9</p>

DECISION: If any “E6” are circled in **Tasks 9, 10** or **11**, CONTINUE the interview.
If only “5” are circled, STOP the interview. If in any doubt, CONTINUE the interview.



Section 6 TARGET: Stage 6


Advanced additive part-whole

Do all **three** tasks on these two pages.

TASK 12

SAY: Tana got an ipod with some songs on it.
He downloaded another 148 songs and he now has 176 songs in total.
How many songs were on his ipod when he first got it?

INTERVIEW 1 TASK 12



Tana got an ipod with some songs on it. He downloaded another 148 songs and he now has 176 songs in total.


How many songs were on his ipod when he first got it?

Stage	Strategy observed
Early 6	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Mix of counting and part-whole strategies (Stage E5) e.g., [148] 158, 168; $168 + 2 = 170$; $170 + 6 = 176$; $20 + 2 + 6 = 28$</p> <p>Attempts part-whole strategy with error (Stage 5) e.g., $176 - 150 = 26$; $26 - 2 = 24$ (compensates in the wrong direction)</p>
6 or higher	<p>Uses a part-whole strategy e.g.,</p> <ul style="list-style-type: none"> - Place value partitioning e.g., $(100 - 100) + (70 - 40) + (6 - 8) = 30 - 2 = 28$ - Adding on in parts e.g., $148 + 20 = 168$; $168 + 8 = 176$; $20 + 8 = 28$ or $176 - 20 = 156$; $156 - 8 = 148$; $20 + 8 = 28$ - Rounding and compensation e.g., $148 + 30 - 2 = 176$; $30 - 2 = 28$ - Making to tens and compensation e.g., $148 + 2 = 150$; $150 + 20 = 170$; $170 + 6 = 176$; $2 + 20 + 6 = 28$

TASK 13

SAY: There are 40 small squares in the chocolate block.
How many rows are hidden under the wrapping?
If the student does not understand that the question is asking for the number of rows, explain this to them.

INTERVIEW 1 TASK 13



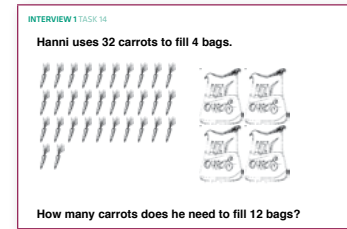
There are 40 small squares in the chocolate block.

How many rows are hidden under the wrapping?

Stage	Strategy observed
Early 6	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Uses an additive strategy (Stage 5) e.g.,</p> <ul style="list-style-type: none"> - Doubling additively e.g., $4 + 4 = 8$; $8 + 8 = 16$; $16 + 16 = 32$; $4 + 4 = 8$
6 or higher	<p>Uses a multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Derived from basic fact e.g., $10 \times 4 = 40$ so $8 \times 4 = 32$ so the answer is 8 or $10 \times 4 = 40$ so there are $10 - 2 = 8$ - Multiplication facts e.g., $40 - 8 = 32$ and $32 \div 4 = 8$ (or $8 \times 4 = 32$)

TASK 14

SAY: Hanni uses 32 carrots to fill 4 bags.
How many carrots does he need to fill 12 bags?



Stage	Strategy observed
Early 6	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Uses an additive strategy (Stage 5) e.g.,</p> <ul style="list-style-type: none"> - Doubling additively e.g., $32 + 32 = 64$; $64 + 32 = 96$
6 or higher	<p>Uses a multiplicative strategy</p> <ul style="list-style-type: none"> - Unitising e.g., 8 carrots per bag because $4 \times 8 = 32$; $12 \times 8 = 96$ - Using ratios e.g., Three times as many bags because $3 \times 4 = 12$; $3 \times 32 = 96$

DECISION: If any “6” are circled in **Tasks 12, 13** or **14**, CONTINUE the interview.
If **only** “E6” are circled, STOP the interview. If in any doubt, CONTINUE the interview.



Section 7 TARGET: Early Stage 7

Advanced multiplicative part-whole

Do all **three** tasks on these two pages.

TASK 15

SAY: Kathie ran 4.3 kilometres on the first day.
She ran 5.15 kilometres on the second day.
How far did Kathie run altogether?

INTERVIEW 1 TASK 15

Kathie ran 4.3 kilometres on the first day.
She ran 5.15 kilometres on the second day.



How far did Kathie run altogether?


Stage	Strategy observed
6	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Misunderstands decimal place value (Stage 6) e.g.,</p> <ul style="list-style-type: none"> - Ignores the decimal points e.g., $4.3 + 5.15 = 558$ - Treats numbers after the decimal as whole numbers e.g., $4.3 + 5.15 = 9.18$ [often said “nine point eighteen”]
Early 7 or higher	<p>Uses part-whole strategies with decimal place value understanding e.g.,</p> <ul style="list-style-type: none"> - Place value partitioning e.g., $(4 + 5) + (0.3 + 0.1) + 0.05 = 9.45$ - Adding on in parts e.g., $4.3 + 5 = 9.3$; $9.3 + 0.15 = 9.45$ or $9.3 + 0.1 = 9.4$; $9.4 + 0.05 = 9.45$

TASK 16

SAY: There are 33 boxes.
Each box holds 12 bottles of lemonade.
How many bottles are there altogether?

INTERVIEW 1 TASK 16

There are 33 boxes.
Each box holds 12 bottles of lemonade.



How many bottles are there altogether?


Stage	Strategy observed
6	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Uses a mix of multiplicative and additive strategies (Stage 6) e.g., $12 + 12 + 12 = 36$; $36 \times 10 = 360$; $360 + 36 = 396$ or $30 \times 12 = 360$; $360 + 12 + 12 + 12 = 396$</p>
Early 7 or higher	<p>Uses a multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Partitioning e.g., $33 \times 10 = 330$; $33 \times 2 = 66$; $330 + 66 = 396$ or $30 \times 10 = 300$; $3 \times 10 = 30$; $30 \times 2 = 60$; $3 \times 2 = 6$; $300 + 30 + 60 + 6 = 396$ - Derived from basic facts e.g., $3 \times 12 = 36$ and $30 \times 12 = 360$; $36 + 360 = 396$ - Triples and thirds e.g., $12 \times 33 = 4 \times 99$; $4 \times 100 = 400$; $400 - 4 = 396$

TASK 17

SAY: There are 20 children who go to a country school.
Three-fifths of them travel to school by bus.
How many children is that?

INTERVIEW 1 TASK 17

There are 20 children who go to a country school.
Three-fifths ($\frac{3}{5}$) of them travel to school by bus.



How many children is that?

Stage	Strategy observed
6	Cannot solve the problem or Uses an earlier numeracy stage Uses additive strategies (Stage 5) e.g., $\frac{1}{5}$ of 20 is 4 because $4 + 4 + 4 + 4 + 4 = 20$; $\frac{3}{5}$ of 20 = $4 + 4 + 4 = 12$
Early 7 or higher	Uses multiplicative strategies e.g., $\frac{1}{5}$ of 20 is 4 because $5 \times 4 = 20$ or $20 \div 5 = 4$ then multiplies (or adds) to get $\frac{3}{5}$, i.e., $3 \times 4 = 12$ [or $4 + 4 + 4 = 12$]

DECISION: If any “E7” are circled in **Tasks 15, 16** or **17**, CONTINUE the interview.
If only “6” are circled, STOP the interview. If in any doubt, CONTINUE the interview.



Section 8 TARGET: Stage 7

Advanced multiplicative part-whole


Do all **three** tasks on these two pages.

TASK 18

- SAY:** In 1912 the world record time for the 100 metre sprint was 10.6 seconds.
It is now 9.69 seconds.
By how much has the record changed?

INTERVIEW 1 TASK 18

In 1912 the world record time for the 100 metre sprint was 10.6 seconds.
It is now 9.69 seconds.



By how much has the record changed?


Stage	Strategy observed
Early 7	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Misinterprets decimal place value (Stage 6) e.g.,</p> <ul style="list-style-type: none"> - Treats numbers after the decimal as whole numbers e.g., $(10 - 9) + (0.6 - 0.69) = 1 - 0.63 = 0.37$ <p>Attempts part-whole strategy with error (Stage 6) e.g., $(0.6 - 0.69) = 0.09$; $1 + 0.09 = 1.09$ (compensates in the wrong direction)</p>
7 or higher	<p>Uses part-whole strategies e.g.,</p> <ul style="list-style-type: none"> - Place value partitioning e.g., $(10 - 9) + (0.6 - 0.69) = 1 - 0.09 = 0.91$ - Making to ones e.g., $9.69 + 0.31 = 10$; $10 + 0.6 = 10.6$; $0.6 + 0.31 = 0.91$ - Takes off a tidy number and compensates e.g., $10.6 - 1.0 = 9.6$; $9.6 + 0.09 = 9.69$; $1 - 0.09 = 0.91$ - Takes off to get a tidy number and compensates e.g., $10.6 - 9.6 = 1.0$; $1.0 - 0.09 = 0.91$

TASK 19

- SAY:** Bas needs to buy 114 cans of soft drink.
How many 6-packs should he get?

INTERVIEW 1 TASK 19

Bas needs to buy 114 cans of soft drink.

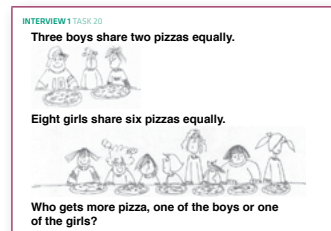


How many 6-packs should he get?

Stage	Strategy observed
Early 7	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Uses a mix of multiplicative and additive strategies (Stage 6) e.g., $6 \times 10 = 60$; $60 + 60 = 120$; $120 - 6 = 114$; $10 + 10 - 1 = 19$</p>
7 or higher	<p>Uses a multiplicative strategy e.g.,</p> <ul style="list-style-type: none"> - Basic facts with adjustment e.g., $10 \times 6 = 60$; $20 \times 6 = 120$; $120 - 6 = 114$; $10 + 10 - 1 = 19$ - Halving then basic facts with adjustment e.g., $114 \div 6 = 57 \div 3$; $60 \div 3 = 20$; $20 - 1 = 19$ - Nice (compatible) numbers e.g., $120 \div 6 = 20$; $120 - 6 = 114$; $20 - 1 = 19$

TASK 20

SAY: Three boys share two pizzas equally.
 Eight girls share six pizzas equally.
 Who gets more pizza, one of the boys or one of the girls?



Stage	Strategy observed
Early 7	Cannot solve the problem or Uses an earlier numeracy stage
7 or higher	<p>Uses proportional approach e.g.,</p> <ul style="list-style-type: none"> - Uses equivalent fractions to get unit rate e.g., $2 \div 3 = \frac{2}{3} = \frac{8}{12}$ of a pizza and $6 \div 8 = \frac{6}{8} = \frac{3}{4} = \frac{9}{12}$ of a pizza, $\frac{9}{12} > \frac{8}{12}$ so girls get more each. - Uses equivalent ratios e.g., $2:3 = 6:9$ so 9 boys would share 6 pizza and they get a lesser share than 8 girls sharing 6 pizza. - Rate argument e.g., 3 times as much pizza for the girls but fewer than 3 times as many girls. <p>Partial solution e.g., $2 \div 3 = \frac{2}{3}$ of a pizza, $6 \div 8 = \frac{6}{8} = \frac{3}{4}$ of a pizza, and $\frac{3}{4} > \frac{2}{3}$ [Ask: How do you know $\frac{3}{4} > \frac{2}{3}$? Rate as “7” if they can explain why.]</p>

DECISION: If any “7” are circled in **Tasks 18, 19** or **20**, CONTINUE the interview.
 If **only** “E7” are circled, STOP the interview. If in any doubt, CONTINUE the interview.



Section 9 TARGET: Early Stage 8 Advanced proportional

Do both tasks on this page.

TASK 21

SAY: The hairdresser has 4.5 litres of dye left.
Each tint uses 0.375 litres of dye.
How many tints can the hairdresser do?

INTERVIEW 1 TASK 21

The hairdresser has 4.5 litres of dye left.
Each tint uses 0.375 litres of dye.



How many tints can the hairdresser do?

Stage	Strategy observed
7	Cannot solve the problem or Uses an earlier numeracy stage
Early 8 or higher	<p>Uses multiplicative strategies e.g.,</p> <ul style="list-style-type: none"> - Successive doubling e.g., $2 \times 0.375 = 0.75$; $2 \times 0.75 = 1.5$; $3 \times 1.5 = 4.5$; $2 \times 2 \times 3 = 12$ - Multiplication facts and compensation e.g., $3.750 \div 0.375 = 10$; $4.5 - 3.750 = 0.750$; $0.750 \div 0.375 = 2$; $10 + 2 = 12$ or $10 \times 0.375 = 3.75$; $2 \times 0.375 = 0.75$; $10 + 2 = 12$ <p>Turns decimals into fractions e.g., $0.375 = \frac{3}{8}$; $4.5 = 4\frac{1}{2}$; $4\frac{1}{2} = \frac{36}{8}$; $\frac{36}{8} \div \frac{3}{8} = 12$</p>

TASK 22

SAY: Jacinda gets 32 of her 40 shots in.
What percentage of her shots does she get in?

INTERVIEW 1 TASK 22

Jacinda gets 32 of her 40 shots in.



What percentage of her shots does she get in?

Stage	Strategy observed
7	<p>Cannot solve the problem or Uses an earlier numeracy stage</p> <p>Estimation strategies (Stage 7) e.g., Half of 40 is 20 (that's 50%) and 30 shots is three-quarters (that's 75%) so it is more than three-quarters.</p>
Early 8 or higher	<p>Uses multiplicative strategies e.g., $2\frac{1}{2} \times 40$ is 100; $2\frac{1}{2} \times 32$ is 80; 80 out of 100 = 80%</p> <p>Uses equivalent fractions e.g., $\frac{32}{40} = \frac{8}{10} = \frac{80}{100} = 80\%$</p>

Stop the interview