Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

		Answer
1.	Tim borrowed 3 picture books, 2 comic books, and 2 non-fiction books from the library. How many books did Tim borrow in total? 3 + 2 + 2 = **7 books**	*7 [books]*
2.	In Troy's bookcase, the number of books in each section is different. The bookcase has three sections: • Section A has 5 books. • Section B has 2 more books than Section A. • Section C has 3 fewer books than Section B. How many books are in Troy's bookcase altogether? Section A = 5 books; section B = 5+2 = 7; section C = 7 – 3 = 4. Total: 5+7+4 = **16 books.**	*16 [books]*
3.	At the movie theater, tickets for a show are priced at $5 for children and $8 for adults. A group of friends buys a total of 4 tickets: 3 child tickets and 1 adult ticket. How much did the group spend in total? 3 child tickets at $5 each: 3×5=15; 1 adult ticket at $8: 8. Total: $15 + $8 = $23 Or you can also add up each cost: $5 + $5 + $5 + $8 = **$23.**	*$23*
4.	Emma has 20 books; Liam has 20 + 3 or 23 books; Sophia has half of Emma: 10 books. Total number of books: 20 + 23 + 10 = **53 books**.	*53 [books]*
5.	If she reads 6 pages a day starting Monday, she would have read 30 pages by Friday, 36 pages by Saturday, then another 4 pages on Sunday. Myra will finish reading the book on **Sunday** after reading the last 4 pages.	*Sunday*

Day	MON	TUE	WED	THU	FRI	SAT	SUN
	6	+ 6	+ 6	+ 6	+ 6	+ 6	+4
Total pages	6	12	18	24	30	36	40

6.	a. How many pages are in the fifth book? **240 pages** Book 1: 100 pages Book 2: 25 pages more than Book 1 → 100 + 25 = 125 pages Book 3: 10 pages less than Book 2 → 125 - 10 = 115 pages Book 4: 58 pages less than Book 3 → 115 – 58 = 57 pages Book 5: Same as Book 2 and Book 3 combined → 125 + 115 = **240 pages** b. How many pages do all five books have combined? **637 pages** Total pages in all five books: 100+125+115+57+240 = **637 pages**	*a. 240 [pages]* *b. 637 [pages]*
7.	a. How many hours apart are Alice's and Bob's time zones? Since Bob's time is later, his time zone is ahead of Alice's. Difference = 9:00 PM - 7:00 PM = **2 hours** b. If the movie lasts 2 hours and Alice finishes watching at 9:00 PM in her time zone, what time will Bob finish watching the movie? Bob will finish 2 hours later at **11:00 PM** in his time zone.	*a. 2 [hours]* *b. 11:00 PM or 11:00 p.m.*

8. End Time of the Movie: 6:15 PM + 2 hours 30 minutes = 8:45 PM
Add Discussion Time: 8:45 PM + 45 minutes = 9:30 PM
The discussion will end at **9:30 PM**.

9:30 PM or 9 p.m.

9. Days reading per week: 5 days per week
Pages read per week: 5 × 8 = 40 pages per week

MON	TUE	WED	THU	FRI	SAT	SUN	
					+8		→8 pages
+8	+8		+8	+8	+8		→40 pages
+8	+8		+8	+8	+8		→40 pages
+8	+4						→12 pages

On Tuesday, he has only 4 pages left to read. Cameron finishes on **Tuesday**.

Tuesday

10. First, calculate the number of days needed: 12 hours ÷ 0.75 hours/day = 16 days
David listens for 16 days, starting on Monday.
Day 1, day 8, day 15 fall on Monday.
The 16th day is Tuesday. Therefore, David will finish the audiobook on **Tuesday.**
Another way:
First, convert everything to minutes: Audiobook length: 12 hours = 12 × 60 = 720 minutes.
Since he listens each day for 45 minutes, 720 ÷ 45 minutes = 16 days. Day 1, day 8, day 15 fall on Monday. The 16th day is **Tuesday**.
Or we can list the 45 min of daily listening time as follow:

Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Day 8**	**Day 9**	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 16**
M	Tu	W	Th	F	S	S	M	Tu	W	Th	F	S	S	M	**Tu**
45	90	135	180	225	270	315	360	405	450	495	540	585	630	675	720

Tuesday

11. a. How many pages of the book are covered in the movie?
¾ of 500 pages = **375 pages.**

b. If it takes the club 1 week to read 75 pages per day, what is the minimum number of full days will it take them to read the entire book before watching the movie?
500/75 = 6 $^{2}/_{3}$ days ≈ **7 days.**

a. 375 [pages]

b. 7 [days]

12. In each week, the number of pages Quentin reads is 25+6×4 = 49. There are about 285/49 = 5 R40 ≈ 5.8 weeks. So, in 5 full weeks, he will have read: 5×49 = 245.

- Number of remaining pages: 285 – 245 = 40 pages left.
- On Sun, he reads 25 pages, and 40 – 25 or 15 pages remained.
- Mon to Wed (3 days), he reads 4×3 or 12 more pages and has 3 remaining pages.
- On Thu, he reads these remaining pages.

So, total days to finish the book: 5 full weeks + 3 days + 1 day = 35 days + 1 day + 3 days + 1 day = **40 days.**
We can organize the data into a table:

	SUN	**MON**	**TUE**	**WED**	**THU**	**FRI**	**SAT**	**Total**
Wk1 - 5	+25	+4	+4	+4	+4	+4	+4	49 × 5 = 245 pages
Wk6	+25	+4	+4	+4	+3			40 pages
								245 + 40 = 285

Number of days: (5 weeks × 7) + (5 days) = 35 + 5 = **40 days**.

40 [days]

13. Claire needs one more book to make groups of 4, 5, and 6. The smallest multiple of 4, 5, and 6 is 60. So, the answer is 1 less than 60, which is **59.**
Another way: write multiples of 4, 5, and 6 (minus 1)
6: 5, 11, 17, 23, 29, 35, 41, 47, 53, **59**, 65, …
5: 4, 9, 14, 19, 24, 29, 34, 39, 44, 49, 54, **59**, 64, …
4: 3, 7, 11, 15, 19, 23, 27, 31, 35, 39, 43, 47, 51, 55, **59**, 63, …
We can also find LCM (4, 5, 6) -1 = 60 – 1 = **59**

59 [books]

14. Pages 1 to 9: 9 digits; pages 10 to 99, 90 pages: 90 × 2 = 180 digits
Remaining digits: 225 – (9+ 180) = 225 -189 = 36 digits.
Since a 3-digit page uses 3 digits, this remaining 36 digits are used for 36 ÷ 3 or 12 pages.
Therefore, the book has 99 + 12 = **111 pages.**

111 [pages]

15. a. How many days will it take Ethan to finish the 3rd book?
On day 1, he reads 50 pages, on day 2 he reads 55 pages, on day 3 he reads 60 pages, and so on. We can make a table for this pattern:

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
50	55	60	65	70	75	80
50	50+55=105	105+60=165	165+65=230	230+70=300	300+75=375	375+80=455

It will take him **7 days.** On the last day, he reads the remaining pages.

b. After 14 days, how many total pages has Ethan read? How many pages are left to complete the challenge?
Book 1: 320/80 = 4 days; book 2 = 3 days; book 3 = 7 days. Total days: 14 days.
Total pages read in **14 days**: 320 (Book 1) + 150 (Book 2) + 450 (Book 3) = **920 pages**
Ethan has read 920 pages in 14 days. Since the challenge is to read 3 books in 2 weeks, no pages are left to complete the challenge.

a. 7 [days]

b. 920 [pages], no pages left.

16. VIP seats = 5×30 = 150 seats. Revenue: $20×150 = $3000
Regular seats = 15×30 = 450 seats. Revenue: $15×450 = $6750
Total revenue = $3000 + $6750 = **$9750**

$9750 or

$9,750

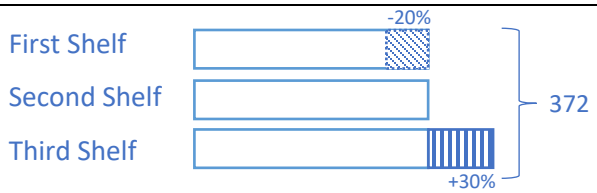
17.
- During the first 10 days, he will read 1 + 2 + 3 + … + 10 = 55 pages.
- During the second 10 days, he will read 10×10 = 100 pages more since on 11th day he will read 10 more pages than 1st day, on 12th day he will read 10 more pages than 2nd day etc. So, he will read 55+100 = 155 pages during the second 10 days, similarly 155+100 = 255 pages during the third 10 days and so on.
- For the first 40 days he reads 55 + 155 + 255 + 355 = 820 pages during the first 40 days. After this, he will have 1000 - 820 = 180 more pages to read. In 4 days, he will read 41 + 42 + 43 + 44 = 170 pages; he will read the last 10 pages on the last day. So, he will finish the book in 40 + 4 + 1 = **45 days**.

Another way: find how many consecutive numbers add up to 1000, 1 + 2 + 3 + … + n

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total per week	Week
1	2	3	4	5	6	7	28 pages (4×7)	1
8	9	10	11	12	13	14	77 pages (11×7)	2
15	16	17	18	19	20	21	126 pages (18×7)	3
						…		
36	37	38	39	40	41	42	273 pages (39×7)	6

28 + 77 + 126 + 175 + 224 + 273 = 903 pages in 6 weeks (6×7 = 42 days)
1000 – 903 = 97 more pages
43 + 44 = 87 pages read for 2 more days
97 – 87 = 10 pages will be left for day 45. Thus, it took **45 days** to finish the book.

45 [days]

18.	 **Second shelf**: unknown **First shelf**: 0.8 of second shelf or 4/5 of the second shelf **Third shelf**: 1.3 of the second shelf or 13/10 of the second shelf. 4/5 of second shelf + second shelf + 13/10 of second shelf = 372 $\frac{4}{5}S + S + \frac{13}{10}S = 372$ $\frac{31}{10}S = 372$ $S = 372 \div \frac{31}{10} = 372 \times \frac{10}{31} = 120$ The third bookshelf has 120 + (30% × 120) = 120 + 36 = **156 books.**	*156 [books]*

Solution is available on April 25, 2025
www.mathinaction.org