

Busy Day

A group of your friends have invited you to join them on Saturday to go to a matinee movie, get some lunch and play some video games. Your parents say you can go, but only if you do all your chores first. Your chores list includes doing your homework which will take you about 45 minutes, collecting and taking out all the trash which takes about 15 minutes, 30 minutes of folding laundry, and cleaning your room which usually takes about 45 minutes.

Your friends are getting together at 11:00 a.m. and you have a lot to do before your mom and dad will let you go. What time do you need to wake up? Are there other things you need to do before you leave the house? Remember to show all your work in an organized way, using correct math language.

Exemplars

Busy Day

Suggested Grade Span

3-5

Task

A group of your friends have invited you to join them on Saturday to go to a matinee movie, get some lunch and play some video games. Your parents say you can go, but only if you do all your chores first. Your chores list includes doing your homework which will take you about 45 minutes, collecting and taking out all the trash which takes about 15 minutes, 30 minutes of folding laundry, and cleaning your room which usually takes about 45 minutes.

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Alternate Versions of Task

More Accessible Version:

A group of your friends have invited you to join them on Saturday to go to a matinee movie, get some lunch, and play some video games. Your parents say you can go, but only if you do all your chores first. Your chores list includes homework (45 minutes), collecting and taking out all the trash (15 minutes), folding laundry (30 minutes) and cleaning your room (45 minutes).

If you wake up at 8:00 a.m. and start your chores right away, when can you meet up with your friends?

More Challenging Version:

A group of your friends have invited you to join them on Saturday to go to a matinee movie, get some lunch, and play some video games. Your parents say you can go, but only if you do all your chores first. Your chores list includes doing your homework, which will take you about 45 minutes, collecting and taking out all the trash, which takes $\frac{1}{3}$ of the time it took to do your homework, folding laundry, which takes $\frac{2}{3}$ of the time it took to do your homework, and cleaning your room, which usually takes about 20% more time than it took to do your homework.

Your friends are getting together at 11:00 a.m. and you have a lot to do before your mom and dad will let you go. What time do you need to wake up? Are there other things you need to do before you leave the house? Remember to show all your work in an organized way, using correct math language.

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Exemplars

Context

We were working on planning ahead and organizing our time to do our homework and get chores done. This was an issue that came up in the classroom as we started working on long term projects. The concept of time and elapsed time had been one we had been working on.

What This Task Accomplishes

This is a multi-step task that has more than one strategy and requires the students to use their knowledge of time including knowing how to tell time, equivalencies between minutes and hours and elapsed time.

This was an advanced task and not easy for the students, yet conceptually it is something they deal with daily.

What the Student Will Do

Most students used hand-held clock manipulatives to solve the problem. Most children did not have a problem with how to approach solving the task, but had a lot of difficulty with the concept of minute/hour equivalencies. For example, most kids regarded 135 minutes as 1 hour and 35 minutes. Many children made assumptions/realizations about other things they would need to do before going out and some children took travel time into account.

Time Required for Task

45 - 90 minutes

Interdisciplinary Links

This task works well with discussions about planning ahead as well as units on time.

Teaching Tips

Students should be able to tell time and have some concept of what elapsed time is. This problem requires concrete manipulatives for most children in this age group. This problem allows you to see children's conceptual understanding of numbers and time by their use of addition and subtraction of time.

Suggested Materials

- Hand-held clock manipulatives
- Graph paper
- Markers

Exemplars

Possible Solutions

The solutions vary depending on what other chores or events the child adds to the problem. The thing to be aware of is children having problems with elapsed time and minute to hour equivalencies.

More Accessible Version Solution:

$$45 + 15 + 30 + 45 = 2 \text{ hours and } 15 \text{ minutes}$$

$$8:00 + 2:15 = 10:15$$

More Challenging Version Solution:

$$45 + 15 + 30 + 54 = 2.4 \text{ hours or } 2 \text{ hours and } 24 \text{ minutes}$$

You would need to wake up at 8:36 a.m. at the latest to be done your chores at 11:00 a.m. This does not provide time for getting dressed, eating breakfast, etc.

Task Specific Assessment Notes

Novice

This student has no idea of how to solve this problem. S/he gives an estimate and draws a clock, but there is no evidence of mathematical reasoning. This student provided no explanation for the estimate given.

Apprentice

This student understood enough to use an initial strategy that was useful. S/he adds the amount of time it takes to do the chores, but does not carry out the second part of the problem correctly. The student understood only part of the problem.

Practitioner

This student uses effective mathematical reasoning. S/he adds items to the chores list, finds the total amount of time needed and subtracts this amount of time from 11:00. S/he also verified the solution by subtracting the time of each chore individually. This student provides a clear explanation of how s/he solved the problem.

Expert

This student solves the problem in a very efficient way. S/he verifies the solution by solving it in another way. It is clear from looking at the student's work how the problem was solved.