Child Care and Development

Applied Problem Booklet

General Math

Applied Problems - Fractions

1. Alice added up the hours on her timecard. She got a total of $35\frac{6}{8}$ hours. Reduce her answer to lowest terms.

2. Leap Frog Day Care is looking for a new building site with plenty of space for an outdoor play yard. A lot on Main St. is $\frac{2}{5}$ acre, while one on Oak St. is $\frac{1}{3}$ acre. Which lot is larger?

3. A day care worker added the total amount of apple juice that was left unused in the lunchroom pitchers. She got an answer of $\frac{17}{2}$ pints. Change her answer to mixed number form.

4. A cook is comparing two recipes for coffee cake. She wants to use the one that has the least amount of cinnamon in it. Recipe One calls for $\frac{2}{3}$ tsp, while Recipe Two calls for $\frac{3}{5}$ tsp. Which recipe should she pick?

5. Which measured quantity of salt is greater: $\frac{3}{8}$ tsp or $\frac{2}{5}$ tsp?

6. Put these measuring cups in order from smallest (left) to largest (right):

$$\frac{7}{8} \quad \frac{3}{4} \quad \frac{5}{6}$$

7. If one pound of lamb costs \$2 per pound, how much does $4\frac{1}{2}$ lbs cost?

8. From a 20 ft length of jump rope, $\frac{1}{3}$ is cut off. How many feet are cut off?

9. A group of 20 children will be making Playdough sculptures. If each child is to use $\frac{3}{4}$ lb, how many pounds of Playdough will have to be on hand?

10. If you have a supply of 6 ounces of baking powder left, and a recipe calls for $\frac{3}{8}$ ounce, how many times could you make this recipe before buying more baking powder?

11. A day care worker worked $32\frac{3}{4}$ hrs during a five-day workweek. How many hours per day did this person average?

12. If a recipe calls for $\frac{2}{3}$ cup of water, $\frac{2}{3}$ cup of milk, $\frac{2}{3}$ cup of vegetable oil, what is the total amount of liquid used in the recipe?

13. For 3 weeks in a row, Mary put in $3\frac{3}{4}$ hrs of overtime each week. What was the total hours of overtime she put in?

14. From a 38 lb supply of Healthy Snack Stix, how many servings, each $\frac{7}{16}$ lb, can be gotten from the supply before running out?

15. A Busy Bee worker opens a $17\frac{1}{2}$ ounce jar of children's glue and uses $2\frac{1}{8}$ ounces. How much glue is left?

16. What is the total amount of vegetables in a serving of mixed vegetables if it is made up of $\frac{1}{8}$ lb of corn, $\frac{1}{16}$ lb of peas, and $\frac{1}{16}$ lb of diced carrots?

17. Determine the total weight of these ingredients:

Butter: 3/4 lb
Pastry Flour: 3 1/2 lb
Sugar: 1 1/2 lb
Salt: 1/16 lb

18. Find the total hours worked by this daycare teacher.

Day 1: 7 1/4 hrs
Day 2: 6 1/2
Day 3: 8 3/4

19. To make a bulletin board display, ribbons of lengths $7\frac{3}{4}$, $5\frac{1}{4}$, and $3\frac{3}{8}$ inches were cut from a 28 inch long ribbon. How much ribbon is left over after cutting these three pieces?

Applied Problems – Decimals

1. a. Express $\frac{7}{16}$ lb. as a decimal accurate to 3 decimal places.

   b. Express $\frac{3}{8}$ lb. as a decimal accurate to 1 decimal place.

2. Which amount of seasoning is greater?
   a) 0.0153 lbs
   b) 0.0155 lbs

3. When increasing the yield of a recipe, a cook finds that he will need 0.679 cup of milk. Write this amount as a fraction with a denominator of 8.

4. Arrange these amounts of salt from smallest (left) to largest (right):
   0.4 0.045 0.405 0.45 0.415

5. Karen knows that she must divide 5 ounces of salt by 16 to convert it to pounds. Do the division and round the answer to the nearest tenth (one decimal place).

6. Round 2.431 pounds of baking powder into fraction form with a denominator of 16.

7. Convert $3\frac{5}{8}$ cups of milk into decimal form.

8. Express 0.8 lbs. of sirloin strip in fraction form.

9. After converting a recipe to a lower yield, a cook finds that she needs 0.901 lbs. of chocolate. Write this decimal quantity as a fraction with a denominator of 8.

10. After calculating the cost of a recipe per serving, Ray gets an answer of $0.5348. Round his answer to the nearest penny.

11. Find the total amount owed for this order:

Quantity	Description	Unit Price	Total
3 cases	#10 cans whole tomatoes	$5.60/case	
2 cases	20 lbs. spaghetti	4.95/case	
3 cases	#10 cans catsup	16.34/case	
2 cases	32 lbs. margarine	15.36case	

GRAND TOTAL _____

12. Di makes $6.75 per hour. If she works 40 hrs. per week for two weeks, what will her gross pay be? If $44.55 is taken out for taxes what is her take-home pay?

13. How many 2.5-ounce balls can be made from a 78 oz supply of Playdough?

14. Find the cost for this vegetable mix:

2.5 lb. box of corn @ $0.47 per pound
5 lb. box of lima beans @ $0.51 per pound

15. How much roast can be served if you started with an 18 lb. roast and 2.75 lbs. are lost when cooked?

16. Find the total weight of these ingredients:

Butter: 0.75 lbs
Pastry Flour: 3.5 lbs
Sugar: 1.5 lbs
Salt: 0.0625 lbs
Dry milk: 0.1875 lbs.

17. If it cost $4.25 to make a supply of garden salad, and 32 salads can be made from this supply, what is the cost per serving?

18. Find the average daily number of diapers used for the past week at Sunny Smiles Day Care: Monday: 44 Tuesday: 48 Wednesday: 67 Thursday: 75 Friday: 109

19. Teddy Bear Child Care serves lunch for 170 children. It is decided that each child should receive 0.25 lb of peas. How many boxes of frozen peas should be ordered if one box weighs 2.5 lbs.?

20. 31 children each require 0.75 ft. along a wall to hang their Jumping Jungles Art creations. What total length of wall space is needed? If each art piece cost $1.50 to make, how much money was spent on all of them?

Applied Problems – Percents

1. An 18 lb infant lost 3.8 lbs due to the flu. What percent of her original weight did she lose? (nearest tenth)

2. Jolly Time Child Care Center has 85 children on their enrollment list. If 40% are boys, how many boys are enrolled?

3. If a 15% tip is automatically added to the bills of all parties over 12 people, what would be the tip on a bill of $96.00?

4. Mary made a $500 down payment on a new refrigeration unit. This $500 is 20% of the price of the unit. Find the price of the refrigeration unit.

5. Toddler Towne pays $240 per month for electricity. If this is 3% of the monthly budget, what is the total budget amount?

6. Of the 48 children enrolled at Kiddie Kountry, 27 are from single parent homes. What percent of the children are from single parent homes? (nearest hundredth percent)

7. If an invoice for kitchen supplies totals $486.75, how much tax is owed on the purchase? Assume a 5% tax rate.

8. If a 14 ounce package of lunch meat advertises a 4% fat content, how many ounces are fat? (nearest hundredth ounce)

9. At Humpty Dumpty Child Care, they charge $15.95 for kindergarten children for half a day. The second child from the same family is $12.15. What percent discount is offered on the second child? (nearest whole number)

10. An end-of-the-month inventory reveals that only two cans of tomato paste are left. If this is 25% of the original amount in stock at the start of the month, how many cans were in stock originally?

11. Elaine received a 12% discount off a $245 supply order. How much money did she save? (nearest cent)

12. Due to vacations, a day care owner estimates that she will lose 35% of her income during the month of July. If she normally takes in $12,500 per month, how much will she make in July?

13. Gingerbread Child Care offers a 5% discount to new families for their first week. If a family's tuition came to $29.40 before the discount was applied, what will be the amount they owe?

Applied Problems - Measurement

1. None

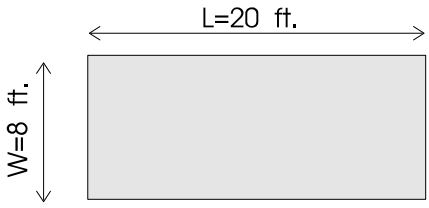
Applied Problems - Formulas

1. A circular hole has to be cut in the side of a playhouse so that a round window with a cross sectional area of 95 sq. in. will fit. If the hole to be cut has a diameter of 10" will it be large enough for the window to fit? Use the formula: $A = \frac{\pi d^2}{4}$

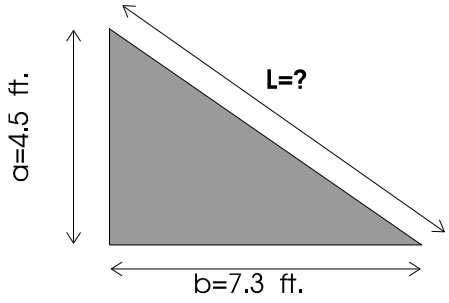
2. A round Kiddie Pool has a radius of 6.2 ft. and a depth of 2 ft. How much water, in cubic feet, will the pool hold? (to the nearest tenth) Use the formula: $V = \pi r^2 h$

3. Find the amount of fencing needed to enclose this rectangular play yard:
Use formula: $P = 2L + 2W$

4. What is the area of this floor? Use: $A=LW$



5. Find the length of this children's slide. Use: $L = \sqrt{a^2 + b^2}$ (nearest tenth)



Applied Problems - Geometry

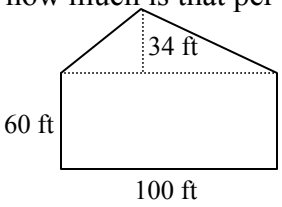
1. You are pricing bids on a shed to hold playground equipment. Mort's Buildings offers a 10' x 12' shed and Goliath Lumber offers a 12' x 15'. Mort's charges $20/sq. ft. for all sheds they build, while Goliath charges a rate of $18/sq. ft.

Find the cost of having :

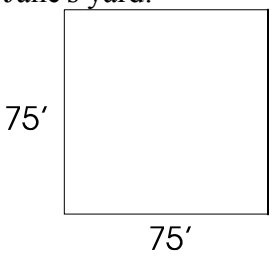
Mort's build your shed_____

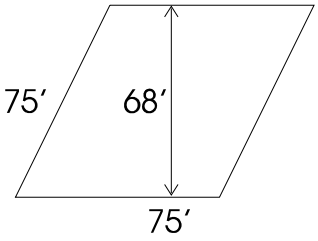
Goliath build your shed_____

2. Nicole has a neighbor who offers to sell her a vacant lot that would allow her to increase her play yard. A diagram of the lot is shown below. If they ask $8,000.00 for the lot how much is that per square yard?



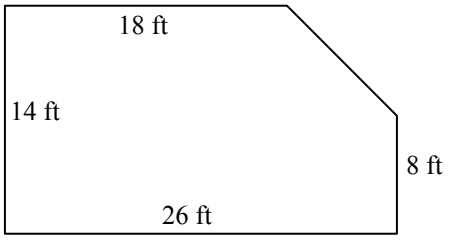
3. Jane and Alice got in an argument over the area of their yards. This diagram shows Jane's yard: and this is Alice's yard:





Jane claims her yard covers more area than Alice's. Alice says that is not true since each side of her yard is 75' just like Jane's. Who is correct?

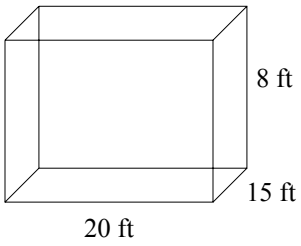
4. How many square feet of floor space is there in this finished basement.



5. How much will it cost to carpet the basement in the previous question, if carpeting and installation is $15.00 per square yard? (round to the nearest penny)

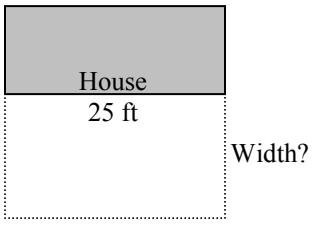
6. You have a rectangular bulletin board that is 6' 6" in by 4' 3". How many feet of border will you need for the bulletin board?

7. You are painting the walls of your activity room. The dimensions of the room are shown below. How many square feet wall area will you have to paint?



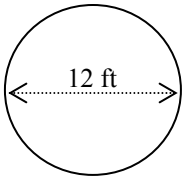
8. You want to fence in your backyard for a play area. You will use the back of your house as one of the borders for the play area so you only need to put fence along three sides. If you want the play yard to have an area of 500 ft^2,

a. How wide will the play area be?

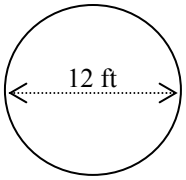


b. How many feet of fence will you have to buy?

9. You want to mark out a circle on floor of the activity room with masking tape. The diameter of the circle is 12 ft. How many feet of tape will you need? (nearest hundreth)

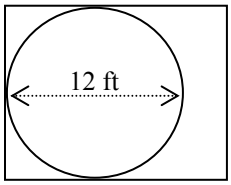


10. You want to buy a carpet remnant to cover the circle in the previous problem. What is the area of the circle in square yards? (nearest hundreth)



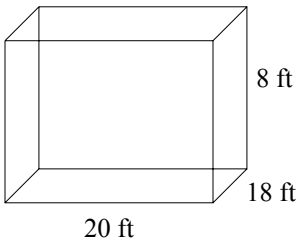
11. The remnants are 15 feet wide but you can get any length you want. How long must the carpet be to cover the circle?

12. After you cut the circle from the remnant, how many square yards of waste will you have left? (nearest hundreth)



13. A circular inflatable swimming pool has a 10 ft diameter and is 18 inches deep. How many gallons of water will it hold? (1 cubic foot = 7.48 gallons) (nearest gallon)

14. The room below has poor ventilation so you buy a window fan that can move 40 cubic feet of air per minute. How long (in hours and minutes) will it take to completely recirculate the air in the room?



15. You have a cylindrical plastic container that you want to use to store cereal. The container is 10 inches in diameter and 15 inches tall. How many boxes of cereal that are 3” x 8” x 12” could the container hold?

Applied Problems Answer Key

Fractions
1.) 35 3/4 hrs
2.) 2/5 acre lot
3.) 8 1/2 pts
4.) Recipe Two (3/5 tsp.)
5.) 2/5 tsp
6.) 3/4, 5/6, 7/8
7.) $9
8.) 6 2/3 ft
9.) 15 lbs
10.) 16 times
11.) 6 55/100 hrs
12.) 2 cups
13.) 11 ¼ hrs.
14.) 86 complete servings
15.) 15 3/8 ounces
16.) 1/4 lb
17.) 5 13/16 lb
18.) 22 1/2 hrs
19.) 11 5/8 in

Decimals
1.) 0.438 lbs, 0.4 lbs
2.) Choice B
3.) 5/8 cup
4.) 0.045, 0.4, 0.405, 0.415, 0.45
5.) 0.3 lbs
6.) 2 7/16 lbs
7.) 3.625 cups
8.) 4/5 lb
9.) 7/8 lb
10.) $0.53
11.) $106.44
12.) $495.45
13.) 31 complete rolls
14.) $3.73
15.) 15.25 lbs
16.) 6 lbs
17.) $0.13 per salad
18.) around 68 or 69 a night
19.) 17 boxes
20.) 23.25 ft, $46.50

Percents
1.) 21.1% increase
2.) 34
3.) $14.40
4.) $2500
5.) $8000
6.) 56.25%
7.) $24.34
8.) 0.56 oz

9.) 24%
10.) 8 cans
11.) 29.4 lbs
12.) $8125/month
13.) $27.93

Measurement
None

Formulas
1.) No, 78.5 sq in. is less than 95 sq in.
2.) 241.4 cubic feet
3.) 214.2 ft
4.) 160 sq ft.
5.) 8.6 ft

Geometry
1.) Mort's: $2,400 Goliath's: $3,240
2.) 7,700 sq ft = 856 sq yd → $9.35/sq yd

3.) Jane's yard is larger by 525 sq ft.
4.) 340 sq ft
5.) 340 sq ft = 37.778 sq yd → $566.67
6.) 21.5 sq ft
7.) 560 sq ft
8.) a.) 20 ft wide
    b.) 65 ft total
9.) 37.68 ft
10.) 113.04 sq ft = 12.56 sq yd
11.) 12 ft
12.) 7.44 sq yd
13.) 881 gallons
14.) 1 hour & 12 minutes
15.) 4 boxes

Applied Problems - Quiz

Fractions

1. Out of a total preschool enrollment of 27 children, 12 will be graduating at the end of the year. What fraction of the children is graduating?

2. In one class at Dreamland Playschool, 7 out of 12 children are girls. In another class, 5 out of 9 are girls. Which group has a larger portion of females?

3. A paste recipe calls for 3/4 cup of water. If you make a triple batch, how much water is needed?

4. Little Angels Preschool goes through 1 1/4 bucket of Playdoh a month. What amount should they order for the next whole year?

5. A science demonstration requires adding 3/4 cup of vinegar and 1/3 cup of cooking oil to 1/2 cup of water. What will the total liquid volume be in cups?

6. Samantha stole 3/8 of Kyle's lunch. What fraction of his lunch did Kyle get to eat?

7. Yesterday morning there was 2 1/2 pounds of cheese in the refrigerator. If 3/4 pound was used up during the day, how much is left?

Decimals

1. A bulletin board is 37 5/8" tall. What is the height expressed as a decimal number of inches?

2. Often ingredient prices are given to three decimal places per ounce. Which is a better deal, bulk cinnamon at $0.335 per ounce, or $0.33 per ounce?

3. A metric recipe requires 0.65 liters of milk. What fraction of a liter is this? (reduce if possible)

4. Sheila works at Kiddies Towne and makes $8.57 per hour. Brenda works at Little Angels and makes $9.12 per hour. What will the difference in their gross pay be in a 40 hour work week?

5. For all hours over 40 in one week Sandy gets 1.5 times her regular pay. If she makes $7.55 per hour, what is her hourly pay rate for the hours over 40 in a week?

6. Total up the bill for the following: 3 bulbs at $1.27 each, 5 ft. of rope at 17 cents per foot, 2 toys at 3 for $5.00, and one storybook for $8.17 (round your answer to the nearest cent)

7. Sharon Greene, owner of Kids World, has identified $4728 worth of new equipment she would like to buy for the school. The supplier has agreed to take $2000 down, and let Kids World pay the rest in six equal monthly installments, with no interest charged until after seven months. What will the monthly installments be? (round to the nearest cent)

Percents

1. Last month, of a total of 2300 available child days, 1897 were filled. What percent is this?

2. Seventeen of the students at ABC Playschool have siblings enrolled also. If there are 43 children enrolled at ABC, what percent have siblings there?

3. Thirteen percent of the children at Kiddie Towne don't eat meat. If a total of 46 children are enrolled, how many are vegetarians?

4. Identify the part and base in the following problem: Of all the swings at Shady Acres, 5 need new seats this year. If there are 18 swings in all, what percent will be replaced?

5. This year at Pine Ridge Daycare, enrollment is up by seven, to 37 children. What is the percent increase over last year?

6. 27 Children, or 87% of the regulars at Happy Host Community Child Care have both parents working full time. What is the total enrollment of regulars at Happy Host?

7. 10% of kids at Tot Towne have special food requirements. Of a total enrollment of 42, how many have special food requirements?

Measurement

1. A local ordinance requires a minimum play yard space of 12 square yards at a day care. How many square feet is this?

2. There are 3 quarts 10 ounces of juice in a container. How many ounces is this?

3. Sue bought 5 quarts of strawberries. How many cups is this?

4. A bottle of juice has 1800 milliliters in it. How many liters is this?

5. John must take 0.5 grams of iron daily. How many milligrams is this?

6. Kevin needs 60 milliliters of cough syrup 3 times daily. About how many tablespoons is this per dose?

7. A bulletin board is 3 feet by 6 feet, or 18 square feet. How many square meters is this? (nearest hundredth)

Formulas

1. At Humpty Dumpty Preschool gross tuition receipts is directly proportional to the number of enrollees. If 43 enrollees yield gross tuition receipts of $79,550, what number of enrollees corresponds to gross tuition receipts of $53,650?

2. Within a range of 300 degrees to 425 degrees, cooking time is inversely proportional to oven temperature. If a roast cooks in 180 minutes at 325 degrees, how long will it take at 375 degrees?

Geometry

1. Kelly is cutting pizzas into six equal pieces each. What angle in degrees is each piece?

2. A bulletin board measures 3 feet by 6 feet. How many feet of crepe paper will be needed to cover the perimeter of the bulletin board?

3. A new sandbox area will be added to the Kids Care Playschool. How many cubic feet of sand should be ordered to fill the 2-foot deep by 6-foot by 8-foot sandbox?

4. Sharon needs to order paint for the new "game circle" to be painted on the playground. How many square feet of coverage will be needed for **three coats** on the 15-foot diameter circle?

5. A triangular reading area will be created in the corner of Room B7 at Jones Elementary. How many square feet of carpeting will be needed to cover the triangular area that has 2 perpendicular sides that are 4 feet and 5 feet long?