

Extra Practice

1.1

Name _____

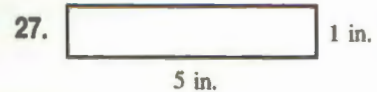
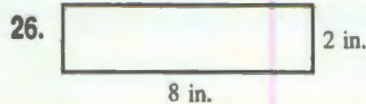
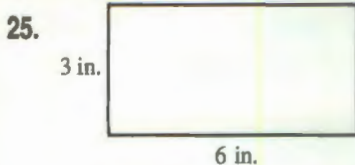
In 1–12, use mental math.

1. What is the sum of 3 and 6?
2. What is the sum of 14 and 4?
3. What is the sum of 5 and 8?
4. What is the difference of 7 and 3?
5. What is the difference of 12 and 6?
6. What is the difference of 10 and 1?
7. What is the product of 2 and 9?
8. What is the product of 6 and 4?
9. What is the product of 4 and 4?
10. What is the quotient of 27 and 9?
11. What is the quotient of 15 and 3?
12. What is the quotient of 35 and 5?

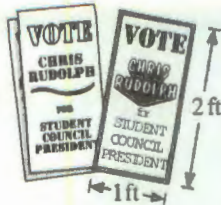
In 13–24, evaluate the expression.

13. $[10 - 4 \cdot 2] \cdot 3$
14. $4 + [3 \cdot 4 - 5]$
15. $14 - [(2 \cdot 6) + 1]$
16. $[4 \cdot 4 + 2] + 4$
17. $8 + [49 \div (3 + 4)]$
18. $11 - [48 \div 4 \cdot 2]$
19. $[12 - (12 \div 2)] + 3$
20. $[18 \div (2 + 1)] - 4$
21. $24 \div [(4 \cdot 3) - 6]$
22. $[100 \div (5 \cdot 2)] + 3$
23. $[3 \cdot 3 + 12] \div 7$
24. $36 \div [12 - (6 \div 2)]$

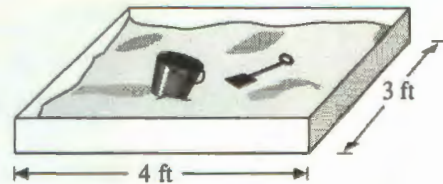
Geometry In 25–27, find the perimeter of the figure.



28. **Campaign Posters** You are running for Student Council president and you want to make campaign posters. Each poster will have a height of 2 ft and a width of 1 ft. If you make 8 posters, how many square feet of poster paper do you need?



29. **Sandbox Construction** You are making a sandbox for your younger brother. The width of the sandbox is 3 ft and its length is 4 ft. How much will it cost to construct the boundary of the sandbox if the wood you are using costs \$2 per foot?



30. **Library Fines** You borrowed three books from the library. All three books were due two days ago. If the fine for late return is 5¢ per day, how much money do you owe if you return the books today?

Total Owed	=	Number of Books	·	Fine per Book per Day	·	Number of Days
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Extra Practice

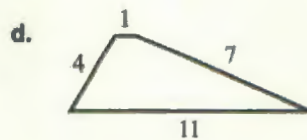
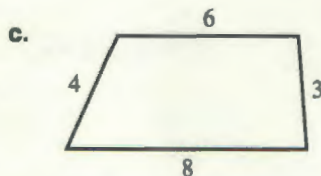
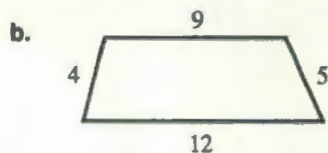
1.2

Name _____

In 1-24, evaluate the expression.

1. $x + 5$, when $x = 4$
2. $y - 4$, when $y = 19$
3. $3x + 2$, when $x = 2$
4. $5w + 8$, when $w = 3$
5. $7 - 2x$, when $x = 2$
6. $3a + 4b$, when $a = 3$ and $b = 1$
7. $6c - d$, when $c = 2$ and $d = 10$
8. $4w - s + 2$, when $w = 2$ and $s = 7$
9. $11 + 3x - 5y$, when $x = 1$ and $y = 2$
10. $(a + 3) + 2b$, when $a = 1$ and $b = 2$
11. $9a - (2 + b)$, when $a = 1$ and $b = 6$
12. $3x + (x - 4)$, when $x = 6$
13. $(2y + 6) - 4y$, when $y = 3$
14. $5c - (2 + c)$, when $c = 2$
15. $2b(7 + b)$, when $b = 1$
16. $(3x + 1)x$, when $x = 3$
17. $3x(2y - 3)$, when $x = 5$ and $y = 2$
18. $3x + 2(2x + 5)$, when $x = 1$
19. $15 \div (2a + 1)$, when $a = 1$
20. $(7x + 4) \div 2$, when $x = 2$
21. $x \div (2y + 1)$, when $x = 21$ and $y = 1$
22. $b \div (3a - 2)$, when $a = 2$ and $b = 16$
23. $(6a + 2) \div b$, when $a = 3$ and $b = 2$
24. $[10 - (2x \div 3)] + y$, when $x = 3$ and $y = 4$

25. **Geometry** A trapezoid is a 4-sided polygon which has 2 parallel sides.
- a. Write an expression that represents the perimeter of a trapezoid whose sides have lengths a , b , c , and d . Use this expression to find the perimeter of each trapezoid.



26. **Interest** Suppose you deposit \$100.00 in a savings account that pays an annual rate of 5%. How much interest would you earn in 6 months? ($\frac{1}{2}$ of year)

$$\boxed{\text{Interest}} = \boxed{\text{Amount of Deposit}} \cdot \boxed{\text{Interest Rate (decimal)}} \cdot \boxed{\text{Time (years)}}$$

$$5\% = .05 = \frac{5}{100}$$

27. **Temperature Conversion** You are performing a chemistry experiment. You know that water freezes at 0°C , but your thermometer measures temperature in degrees Fahrenheit. At what temperature in degrees Fahrenheit will water freeze?

$$\boxed{\text{Temperature } (^\circ\text{F})} = \boxed{\frac{9}{5}} \cdot \boxed{\text{Temperature } (^\circ\text{C})} + \boxed{32}$$

Extra Practice

1.3

Name _____

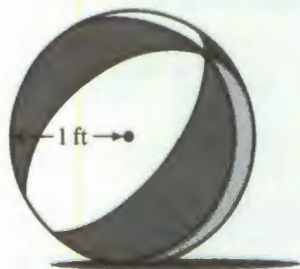
In 1–12, write the expression in exponential form.

- | | | |
|-----------------------------------------------------------------|---------------------------------|-------------------------------------|
| 1. Three to the fourth power | 2. Seven squared | 3. x cubed |
| 4. y to the fifth power | 5. 3 to the w power | 6. $6x$ cubed |
| 7. $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$ | 8. $a \cdot a \cdot a$ | 9. $2 \cdot 2$ |
| 10. $x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$ | 11. $5 \cdot 5 \cdot 5 \cdot 5$ | 12. $3x \cdot 3x \cdot 3x \cdot 3x$ |

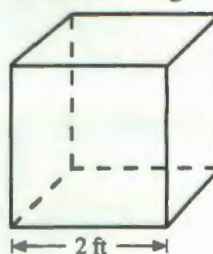
In 13–24, evaluate the expression.

- | | | |
|--------------------------------------------|--------------------------------------------|-----------------------------------------------|
| 13. x^3 , when $x = 2$ | 14. a^2 , when $a = 10$ | 15. $y^3 - 5$, when $y = 2$ |
| 16. $6 + x^2$, when $x = 5$ | 17. $14 - y^2$, when $y = 3$ | 18. $(x - y)^4$, when $x = 5$ and $y = 3$ |
| 19. $a^2 + b^3$, when $a = 7$ and $b = 1$ | 20. $a + b^3$, when $a = 3$ and $b = 2$ | 21. $(7x - 8)^2$, when $x = 2$ |
| 22. $(3x - 6)^3$, when $x = 3$ | 23. $4a^2 + 2b$, when $a = 2$ and $b = 3$ | 24. $(2y)^2 - x^2$, when $x = 3$ and $y = 2$ |

25. **Beach Ball** When blown up, a beach ball has a radius of 1 ft. How much air is needed to blow up the beach ball? (The volume of a sphere is $V = \frac{4}{3}\pi r^3$ where $\pi \approx 3.14$ and r is the radius.)



26. **Safe Storage** A safe has a cubical storage space inside. What is the volume of a safe with an interior length of 2 ft?

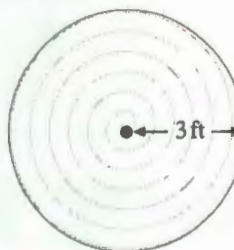


$$V = l \cdot w \cdot h$$

27. **Cylindrical Can** An aluminum can has a radius of 2 in. and a height of 6 in. What is the volume of the can? (The volume of a cylinder is $V = \pi r^2 h$ where $\pi \approx 3.14$, r is the radius, and h is the height.)



28. **Area Rug** A circular area rug has a radius of 3 ft. How much area does the rug cover? (The area of a circle is $A = \pi r^2$ where $\pi \approx 3.14$ and r is the radius.)



In 1–12, evaluate the expression.

- | | | |
|-----------------------|----------------------------|-------------------------|
| 1. $5 + 2 - 3$ | 2. $12 - 6 + 1$ | 3. $10 \cdot 2 \div 4$ |
| 4. $4 + 3 \cdot 2$ | 5. $8 \cdot 3 - 10$ | 6. $5 - 14 \div 7$ |
| 7. $2 + 36 \div 4$ | 8. $10 \div 5 + 3 \cdot 2$ | 9. $4 - 20 \div 10 + 7$ |
| 10. $3 \cdot 2^2 + 1$ | 11. $2 \cdot 3^2 \div 3$ | 12. $4(2 + 3) - 18$ |

In 13–24, evaluate the expression.

- | | | |
|---------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------|
| 13. $3 + 2x^2$, when $x = 2$ | 14. $30 - 3x^2$, when $x = 3$ | 15. $3a - 2b$, when $a = 2$ and $b = 3$ |
| 16. $5x^2 - y$, when $x = 3$ and $y = 5$ | 17. $2x + x^2 - 4$, when $x = 4$ | 18. $a^3 - 3a + 5$, when $a = 2$ |
| 19. $a^2 \div 5 + 3$, when $a = 5$ | 20. $x \cdot y - 8$, when $x = 3$ and $y = 4$ | 21. $a^2 - b \div 4$, when $a = 5$ and $b = 8$ |
| 22. $3y - x^2 \cdot 4$, when $x = 2$ and $y = 6$ | 23. $\frac{2a + b}{3}$, when $a = 4$ and $b = 1$ | 24. $7 - \frac{x}{y} \cdot 2$, when $x = 15$ and $y = 5$ |

Technology In 25–28, two calculators were used to evaluate the expression. They gave different results. Which calculator used the established order of operations?

25. $12 \boxed{-} 4 \boxed{\times} 2 \boxed{+} 1 \boxed{=}$
 Calculator 1: 5 Calculator 2: 17

26. $5 \boxed{\times} 3 \boxed{-} 4 \boxed{\times} 2 \boxed{=}$
 Calculator 1: 7 Calculator 2: 22

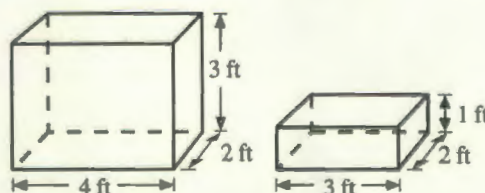
27. $2 \boxed{\times} 6 \boxed{+} 3 \boxed{\div} 3 \boxed{=}$
 Calculator 1: 5 Calculator 2: 13

28. $10 \boxed{-} 5 \boxed{\times} 4 \boxed{\div} 10 \boxed{=}$
 Calculator: 1: 8 Calculator 2: 2

29. **Shotput** During a track meet, Kelly throws the shotput 51 ft, 50 ft, and 58 ft. Write an expression that represents the length of his average throw in feet. Evaluate the expression.

30. **Sales Tax** You want to buy a newly released CD. The CD costs \$17 plus 6% tax. Write an expression that represents how much money in dollars you need to buy the CD. Evaluate the expression.

31. **Fish Tank** You have two fish tanks. The first has a length of 4 ft, a width of 2 ft, and a height of 3 ft. The second has length 3 ft, width 2 ft, and height 1 ft. Write an expression that represents the amount of water in cubic feet both tanks will hold. Evaluate the expression.
- $V = l \cdot w \cdot h$



Extra Practice

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In 1–9, check whether the given number is a solution of the equation.

- | | | |
|----------------------|--------------------------|-------------------------|
| 1. $2x + 3 = 7$, 4 | 2. $4x + 2 = 10$, 1 | 3. $3x - 5 = 1$, 2 |
| 4. $6 = 2x - 8$, 6 | 5. $17 - 4a = 13$, 1 | 6. $5a - 3 = 2a$, 3 |
| 7. $4y - 6 = 2y$, 3 | 8. $y + 3y = 2y + 4$, 3 | 9. $5x + 3 = x + 7$, 1 |

In 10–18, write a question that could be used to solve the equation. Then use mental math to solve the equation.

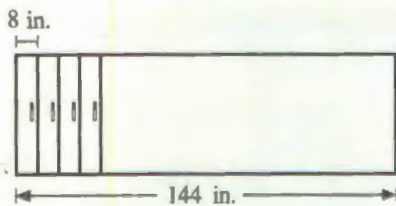
- | | | |
|-----------------------|-----------------------|-----------------|
| 10. $x - 5 = 3$ | 11. $x + 2 = 6$ | 12. $x + 4 = 6$ |
| 13. $x - 2 = 5$ | 14. $4x = 20$ | 15. $3x = 9$ |
| 16. $\frac{x}{2} = 3$ | 17. $\frac{x}{3} = 4$ | 16. $x^3 = 8$ |

In 19–27, check whether the given number is a solution of the inequality.

- | | | |
|------------------------|------------------------------|-----------------------------|
| 19. $x - 5 \leq 7$, 9 | 20. $x + 3 > 8$, 4 | 21. $3 + x < 8$, 5 |
| 22. $10 - x > 2$, 9 | 23. $2x + 1 \geq 10$, 6 | 24. $4x - 3 \leq 5$, 2 |
| 25. $2x - 3 < 0$, 2 | 26. $6x + 1 \geq 8x - 7$, 2 | 27. $5x + 1 \geq x - 3$, 4 |

Locker Installation Suppose your school is replacing some of its lockers. When the old lockers are removed there is a space 144 in. long. Each new locker has a width of 8 in. How many new lockers can be installed?

28. If this problem is represented by the equation $8x = 144$, what do the 8, x , and 144 represent?

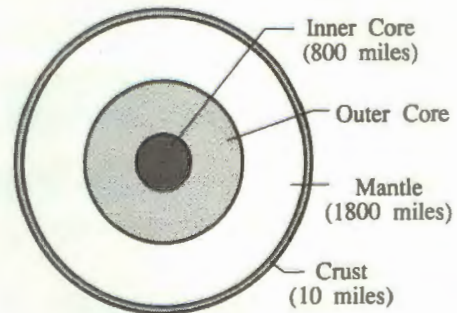


Layers of Earth Earth's radius is approximately 4,010 miles. The crust is approximately 10 miles wide, the mantle is approximately 1800 miles wide, and the inner core has a radius of approximately 800 miles. What is the width of the outer core?

30. If this problem is represented by the equation $10 + 1800 + x + 800 = 4010$, what do the 10, 1800, x , 800, and 4010 represent?

Statue of Liberty The Statue of Liberty's torch has 14 lamps that give off 14,000 watts of light. If all the lamps are identical, how many watts are given off in one lamp?

29. If this problem is represented by the equation $14x = 14,000$, what do the 14, x , and 14,000 represent?



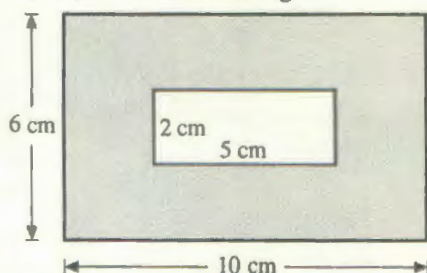
In 1–12, translate the phrase into an algebraic expression.

- | | |
|---------------------------------------|------------------------------------------------|
| 1. 4 more than a number | 2. 6 less than a number |
| 3. The difference of 7 and a number | 4. The sum of a number and 2 |
| 5. 5 times a given number | 6. One third of a given number |
| 7. A number divided by 8 | 8. 9 more than twice a given number |
| 9. 2 less than a number, divided by 3 | 10. 3 more than the product of 10 and a number |
| 11. 5 times the sum of a number and 1 | 12. The sum of a number and 5, divided by 2 |

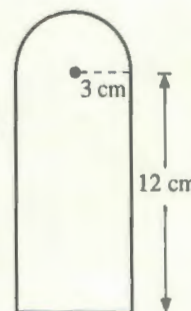
In 13–24, translate the sentence into an equation or an inequality.

- | | |
|---------------------------------------------------------------------|----------------------------------------------------------------|
| 13. Seven more than a number, x , is 10. | 14. The sum of a number, y , and 6 is 13. |
| 15. Eight more than a number, y , is greater than or equal to 10. | 16. The difference of a number, a , and 2 is 8. |
| 17. Six less than a number, z , is less than 21. | 18. Thirteen minus a number, b , is 2. |
| 19. The product of 11 and a number, x , is 22. | 20. Fourteen is less than 7 times a number, x . |
| 21. A number, a , divided by 2 is greater than 9. | 22. The quotient of a number, t , and 3 is 9. |
| 23. Four times a number, b , plus 1 is 17. | 24. Three less than the product of 6 and a number, a , is 9. |

25. **Geometry** Write an expression that represents the area, A , of the shaded region.



26. **Geometry** Write an expression that represents the area, A , of the given region which consists of a rectangle and a semicircle. (The area of a semicircle is $A = \frac{1}{2}\pi r^2$.)



In 27–30, which equation correctly models the situation?

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27. Model Planes Your model plane collection consists of 15 models. Each plane is either a propeller plane or a jet. There are 7 fewer propeller planes than jets. Let x be the number of jets.
a. $x + (x - 7) = 15$ b. $x + 7 = 15$ | 28. Bake Sale You want to make 6 dozen cookies for a bake sale. If you follow the recipe, one batch makes 2 dozen cookies. Let b be the number of batches you need to bake.
a. $2b = 6$ b. $\frac{b}{6} = 2$ |
| 29. Height You are 65 in. tall. You are 18 in. taller than your younger sister. Let h be your sister's height in inches.
a. $h - 18 = 65$ b. $h + 18 = 65$ | 30. Music An eighth note is played twice as fast as a quarter note. Eight eighth notes can be played in one measure of music. Let q be the number of quarter notes played in one measure of music.
a. $2q = 8$ b. $\frac{q}{2} = 8$ |

Extra Practice

1.7

Name _____

Finishing Homework In 1–6, consider the following question.

Your English paper will be finished once it is typed. The paper is 1200 words long and you type 20 words per minute. It is now 3:50 P.M.. Can you finish the paper before the Superbowl begins at 5:00 P.M.?

1. How many minutes before game time?
2. Write a verbal model that relates your typing speed, the time it would take to type the paper, and the length of the paper.
3. Assign labels to your model.
4. Use labels to translate your verbal model into an equation.
5. Use mental math to solve the equation.
6. Can you finish the paper before the kick-off? Explain.

Traveling to a Party In 13–18, consider the following question.

Your whole family is going to a birthday party for your aunt. The party is at her home which is 110 miles away. The party starts at 8 P.M. and you are just leaving at 6:30 P.M.. If your dad drives 55 mph, will you make it to the party on time?

13. How many hours are there before the party begins?
14. Write a verbal model that relates the distance to be traveled, the speed of the car, and the time it will take to arrive at your aunt's house.
15. Assign labels to your model.
16. Use labels to translate your verbal model into an equation.
17. Use mental math to solve the equation.
18. Did your family make it to the party on time? If yes, how early were you? If no, how late were you?

Soccer Camp In 7-12, consider the following question.

The soccer team has raised \$500 to go to summer soccer camp. Since the camp costs \$800 the team will have a car wash to raise the additional money. If the charge is \$4 per car, how many cars need to be washed to earn the extra money?

7. How much money needs to be raised?
8. Write a verbal model that relates the price of a car wash, the number of cars to be washed, and the amount of money needed.
9. Assign labels to your model.
10. Use labels to translate your verbal model into an equation.
11. Use mental math to solve the equation.
12. How many cars need to be washed?

Building a Toolbox In 19–24, consider the following question.

You are building a toolbox for a Father's Day gift. The toolbox should fit on the shelf by your dad's work bench. This shelf is 10 in. deep. The length of the toolbox is 20 in. and the height is 6 in.. In order to have a volume of 960 in.³, how wide should the toolbox be? Will it fit on the shelf?

19. What is the widest the toolbox can be to fit on the shelf?
20. Write a verbal model that relates the length, height, and width of the toolbox, and its volume.
21. Assign labels to your model.
22. Use labels to translate your verbal model into an equation.
23. Use mental math to solve the equation.
24. Will the toolbox fit on the shelf? Explain.



Extra Practice 2.3

Name _____

In 1–12, find the difference.

- | | | |
|-----------------|----------------|----------------|
| 1. $5 - 3$ | 2. $7 - 6$ | 3. $8 - 10$ |
| 4. $3 - 11$ | 5. $-4 - 2$ | 6. $-7 - 8$ |
| 7. $14 - (-2)$ | 8. $9 - (-3)$ | 9. $-3 - (-6)$ |
| 10. $-5 - (-2)$ | 11. $4 - -2 $ | 12. $-6 - 5 $ |

In 13–24, evaluate the expression.

- | | | |
|--------------------|----------------------|--------------------|
| 13. $2 + 5 - 1$ | 14. $3 - 5 + 4$ | 15. $8 - 5 - 6$ |
| 16. $-4 + 3 + 6$ | 17. $-8 + 12 - 5$ | 18. $-3 - 4 + 12$ |
| 19. $-6 - 4 - 2$ | 20. $-4 - 3 + 2$ | 21. $-4 + 7 - 2$ |
| 22. $6 - (-2) - 4$ | 23. $-5 + 10 - (-2)$ | 24. $8 + 3 - (-4)$ |

1-30 only

In 25–30, evaluate the expression. Then simplify the expression and evaluate the simplified form. Check to see that the two values are equal.

- | | |
|------------------------------------|-------------------------------------|
| 25. $5 - (2 + x)$ when $x = 4$ | 26. $12 - (-x) - 4$ when $x = 3$ |
| 27. $-3 - (x - 4)$ when $x = -2$ | 28. $8 + (-x) - 5$ when $x = 3$ |
| 29. $x - (6 - x) + 2$ when $x = 1$ | 30. $2 - (6 - 3) + x$ when $x = -4$ |

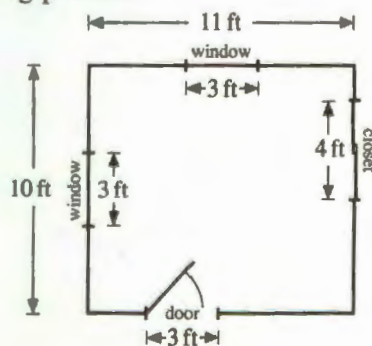
31. **Scrabble** You and a friend are playing Scrabble. You use all of your letters first. Your friend must count the points he has left and subtract them from his score. If his score is 148 points when you play and he has 10 points not yet played, what is his final score?

32. **Planets** The distance between the sun and Mars is approximately 141.6 million miles. The distance between the sun and Earth is approximately 92.9 million miles. Approximate the closest distance between Earth and Mars.

33. **Temperature Change** The following table shows the daily high temperatures for a week in May. Determine the change in temperature each day. Find the total of these changes to discover the net change in temperature.

Day	Temperature	Day	Temperature
Sun.	76°	Thurs.	75°
Mon.	72°	Fri.	74°
Tues.	80°	Sat.	78°
Wed.	75°		

34. **Hanging Posters** You want to hang posters around the perimeter of your room. The dimensions of your room are 10 ft by 11 ft. However, you cannot hang a poster over the two windows, the closet, or the door. What is the perimeter of the room available for hanging posters?



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