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THE VALIDITY OF THE TORRANCE TESTS  
OF CREATIVE THINKING

THESIS

Presented to the Graduate Council of the  
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Fulfillment of the Requirements

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By

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The purpose of this study was to assess content and concurrent validity of the Torrance Tests of Creative Thinking (TTCT). The subjects were thirty-four art majors at North Texas State University between the ages of nineteen and thirty-nine. Content validity for the TTCT, as assessed by seven judges (art professors), was very high; concurrent validity was very low. Only one judge's ranking of the criterion was significantly intercorrelated with that of the other judges ( $p < .05$ ). There were no significant rho correlations between the TTCT and the criterion ( $p < .05$ ). The t-ratio differences between the males and females, for all tasks of the TTCT, were non-significant ( $p < .05$ ). It was concluded that the TTCT were not appropriate for use with adult art majors.

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THE VALIDITY OF THE TORRANCE TESTS  
OF CREATIVE THINKING

Psychologists, educators, and business managers are but a few of the professionals searching for a psychometric instrument which will enable them to predict, with a fair degree of accuracy, creative ability. The construct of creativity is supposed to exist, but because it is so intangible, and almost indefinable, creativity remains illusive. There have been numerous attempts to define creativity and to come to common grounds about its meaning. If creativity is to be defined scientifically, it must be defined in a way that permits objective observation and measurement and is compatible with common and historical usage. Unfortunately, science has continuously failed. In spite of this failure, the mere fact that some attribute exists, presents enough of a challenge to generate new scientific research.

In order to fully understand the sustained interest in and attempts to measure creativity, it is only necessary to look at the past literature. Simpson (1922) developed a test of creative imagination. He defined creative ability as "the initiative that one manifests by his power to break away from the usual sequence of thought into an altogether different thought [p. 235]." This process places great importance on the ability to produce "disassociate" ideas. Simpson, in a

very purposive and humorous manner, distinguishes creative "disassociate" thinking from neurotic thinking, pointing out that they differ in both quality and degree.

From the rationale stated above, Simpson went on to devise a short and easily scorable measure of creative ability. Oddly enough, much of what he proposed is still utilized in current studies of creativity.

Spearman (1930) was one of the early theorists who advocated content-free mental creativity. He viewed creativity as "the power of the human mind to create new content--by transferring relations and thereby generating new correlates--extends its sphere not only to representation of ideas, but also the fully sensuous presentations, and as given in ordinary seeing, hearing, touching, and the like, of every one of us [p. 28]."

Others defined creative thinking in terms of problem solving. Patrick (1937, 1938) believed that creative thought was the synthesis of a four-stage process. The four stages, as originally defined by Wallas (1926), are preparation, incubation, illumination, and elaboration. After extensive research with poets and artists throughout the world, Patrick found that although the process concepts were relevant, they did not occur in any specific order.

Simpson (1922), Spearman (1930), and Patrick (1937, 1938) represent early approaches to the concept of creativity. These people contributed their own small part to the

development of creative measures. However, others have also been active in evaluating creativity. Guilford and his associates (1959) approached the problem of measuring creativity by using multi-factor type tests. Newell, Shaw, and Simon (1962) felt that creative thinking is similar to the process of problem-solving. Newell et. al. went on to state four conditions to be satisfied, which, when satisfied, determined the extent of creative problem-solving. The list of approaches goes on and on; there are literally scores of them. Of all these approaches, there has been little sustained interest to compare with that of E. Paul Torrance.

The first book by Torrance concerning his studies of creative thinking was Guiding Creative Talent (1962), which received much praise from researchers in creativity. In 1966, Torrance made available in research edition, the Torrance Tests of Creative Thinking, his major contribution to science.

Torrance created ~~these tests~~ specifically to measure creativity based on his own definition of creativity. Torrance defined creativity as "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results (1966, p. 6)." The

Torrance Tests of Creative Thinking (TTCT) consist of two types of tests, Verbal and Figural, and two forms, A and B. These two tests consist of several subtests, each designed to measure some aspect of creativity.

Leonard L. Baird commented on the TTCT in The Seventh Mental Measurements Yearbook (Buros, 1972). He stated "that the tests seem to be derived from Torrance's long thinking about creativity and tend to be eclectic, rather than based on systematic theory of creativity [p. 837]." This fact indicates that, in regard to Torrance's interpretation of creativity, the test has content validity.

Wallach (1968) criticized the author and his tests for failing to provide "any evidence in support of Torrance tests that would construe them as creative thinking rather than simply as thinking [p. 839]." He further stated ~~that~~ "there was very little proof that Torrance tests were separable from intelligence tests [p. 839]." Due to such criticism and the general necessity for validation of tests utilized in assessment, this problem will be further examined in this study. The task will be to determine if the Torrance Tests of Creative Thinking have sufficient content validity to warrant their widespread utilization.

A second purpose of this study will be to determine the degree of concurrent validity of the TTCT when the sample consists of adults. The criterion will be artistic ability as perceived by professional judges.

The use of adults as subjects in researching this measure has been rare. The majority of the references to the TTCT cited in The Seventh Mental Measurements Yearbook involved children. In fact, most of the normative data that is provided deals with children. Recognizing this fact, with its possible pitfalls, an adult population has been used as subjects. This approach may be helpful in defining parameters for this test, which to this point have not been clarified.

This study will not represent the first attempt at establishing concurrent validity for the TTCT, and probably will not be the last. Many approaches and criteria have been tested by different experimenters. For example, Wallace (1961) studied saleswomen in a large department store. This study was prompted by the author's interest in determining whether sales success is influenced significantly by the salesperson's creative thinking ability. Using analysis of variance, Wallace found the mean score on the TTCT of those in the department who were judged creative was significantly higher than the mean of those in a non-creative department.

In the Norms--Technical Manual, Torrance (1966) explained how Bish validated the TTCT with educational achievement. This study involved the use of Verbal and Figural Forms A, and 210 fourth, fifth, and sixth graders in a public school. California Achievement Test scores were the criteria. Correlations between the verbal measures of creativity and achievement were all positive and significant



at the .001 level, while the correlations for the non-verbal measures were not significant. Other studies have validated the TTCT with teacher nominations (Torrance and Meyers, 1962). In spite of these validation studies, research is still required because the parameters of the TTCT, as a marketable measure of creativity, are still relatively undefined.

In summary, it appears that there is a great need to arrive at a standardized definition and tool for measuring creativity. Torrance has developed the research instrument which may prove to be the hallmark instrument for measuring creativity. Considering this and the great need for more information, the present study was designed to gather empirical data to augment existing knowledge about this measure. This was accomplished by determining both the content and concurrent validity of the Torrance Tests of Creative Thinking as it is used in an experimentally controlled situation.

## Method

### Subjects

The Ss were thirty-four art majors enrolled at North Texas State University. The Ss were chosen at random from varying courses offered by the art department. The sample consisted of sixteen males and eighteen females, randomly divided into three groups for administrative purposes. The Ss ranged in age from nineteen to thirty-nine. The mean age was twenty-three.

### Materials

This experiment employed the Torrance Tests of Creative Thinking, Verbal Form A and Figural Form B (Appendix A). Also utilized was a short nonsense paragraph which served as the criterion stimulus (Appendix B). Along with the tests, E prepared a typed explanation of Torrance's definition of creativity, which included reasons for using each subtest. Finally, there was a listing of the four criteria utilized in scoring the TTCT as they are defined by Torrance.

### Procedure

The first step in establishing content validity was to choose seven professional judges of creativity. These judges were chosen from the North Texas State University art faculty and were each issued a sample test (TTCT), the typed explanation of Torrance's definition of creativity, which included reasons for using each subtest, and finally, a listing of the four criteria utilized in scoring the TTCT, as defined by Torrance. The judges were given ten minutes to review the test. They then indicated whether they agreed or disagreed with the use of each individual subtest as a measure of creativity. The results from this investigation provided the E with a fairly good indication of content validity.

After the measure of content validity was complete, E undertook the measurement of concurrent validity. This rather complicated process first involved the development of a criterion. This was accomplished by requesting three other

professionals, of the same qualifications, to submit a fifteen-minute problem which would allow art majors enough flexibility that a good indication of their ability could be portrayed. In order to avoid criterion contamination, these judges were not shown the TTCT until after they had submitted their problem. The three problems were then evaluated, and since they were all similar in nature, one was chosen at random. (See Appendix B.)

Subjects were then recruited for testing. Prior to testing, the Ss were only told that they were going to be participants in a psychology study that was attempting to objectively measure creativity. The collection of data took a little over two hours to complete.

When the Ss arrived for testing, they were administered both the TTCT and the single problem which had been previously chosen. To control for fatigue, two of the groups did the problem first and the TTCT next, and the other, larger, group did them in reverse order. The groups varied in size, ranging from nine to sixteen people. The testing took one session per group. At each test session, E read the Ss standardized instructions provided with the TTCT and a separate set of instructions, developed by E, for the independent problem. Upon completion of the second measure (which depended on the group being tested), the Ss were given a ten-minute break and then asked to return to finish testing.

When testing was complete, E hand-scored each of the TTCT. This was done by E instead of the test publisher because the coefficients of reliability between experienced and inexperienced scorers are generally in excess of .90 (Torrance, 1966). Thus, hand scoring was not seen as a source of inaccuracy.

The scoring of the thirty-four single problems was accomplished in a different manner. Each of the seven judges was given the thirty-four single problems and asked to rank them according to their creative value. The raters were given Torrance's definition of creativity and his scoring criteria to serve as guide in their own evaluation. The results of each judge were then recorded. The seven sets of ranks were related through the means of the Spearman Rank Order Correlation. This provided E with an estimate of inter-rater reliability.

The final step in determining the concurrent validity for this adult sample involved two steps. First, the test scores on both the Verbal and Figural parts of the TTCT were placed in rank order. Then, they were correlated with average ranking on the single-problem criteria.

### Results

To assess the degree of content validity in TTCT Verbal Form A, Figural Form B, it was necessary to examine the data obtained from seven professional judges. The data on Table 1

provide a very clear and concise picture of the content validity for the various tasks and for the overall test.

TABLE 1

Seven Judges Dichotomous Evaluation of Content Validity  
for Torrance Tests of Creative Thinking  
Verbal Form A and Figural Form B

Activities	No. of Judges who agree with use	No. of Judges who disagree with use
Verbal Form		
1 Asking	4	3
2 Guessing Causes	4	3
3 Guessing Consequences	4	3
4 Product Improvement	5	2
5 Unusual Uses	7	0
6 Unusual Questions	7	0
7 Just Suppose	7	0
Figural Form		
1 Picture Construction	6	1
2 Picture Completion	7	0
3 Circles	7	0
Total	58	12

Each judge indicated whether he agreed or disagreed with the use of each task in the tests of creative thinking. Activities 1, 2, and 3 of the Verbal section, were the least accepted tasks with four judges agreeing with their use and three judges disagreeing, with their use. Activities 5, 6, and 7 of the Verbal section and activities 2 and 3 of the Figural section were the most acceptable tasks on the test, with all seven judges agreeing with their use to measure creative thinking. When the scores from raters were summed over the

ten tasks, the number of times judges were in agreement with tasks ~~was~~ better than four times greater than the number of disagreements.

The data in Table 1 provide a good indication of the degree of content validity of the TTCT as perceived by seven independent judges. These data are adequate for assessing content validity, but to substantiate concurrent validity, there must be data to indicate the degree of relationship between the TTCT and a criterion.

The first step was to administer the TTCT. Table 2 has the mean and the standard deviations for the various tasks in the TTCT for the Verbal Form A and Figural Form B. Also included in this table are two reference groups which can be utilized for comparison purposes. The average scores for the N.T.S.U. sample on the Verbal section were consistently higher than the sample of male sophomores in the Liberal Arts Department; for female freshman in the Liberal Arts Department, the average scores were either equal to or lower than the N.T.S.U. sample. Regarding the Figural section of the test, only limited normative data were available and were limited to elementary grades.

To assess the degree of relationship between the various judges on their ranking of the criteria, each judge's ranking was intercorrelated with every other one. The intercorrelations for the seven judges were: .11, .23, .17, .24, .06, .08, .24, ( $p > .05$ ). Since none of the intercorrelations were



significant, the three judges least in agreement were eliminated and the correlations recalculated. This augmented the rho values of the four remaining judges to .28 for judge 2, .34 for judge 3, .37 for judge 4, and .33 for judge 7. Judge 4 had the only significant intercorrelation ( $p < .05$ ).

The rho correlation coefficient was further utilized to establish the degree of relationship between the TTCT and the independent problem (criterion). Since the independent problem was scored in rank order, the raw scores on TTCT were also ranked and the two were then correlated. Table 3 contains the results on the degree of relationship that existed between the criterion and the various measures of the tests. These scores were provided for all activities and their totals. A combined total was not computed because Torrance (1966) believes that it is meaningless. The correlations for the nine measures and criterion were not significant.

TABLE 3

Spearman Rank Order Correlation Between Average Rank  
on Independent Problem and Rank Score on Measures  
Derived from Torrance Tests of Creative  
Thinking, Verbal Form A, Figural Form B

Measure	Average Rank for Independent Problem
Verbal Fluency . . . . .	.07
Verbal Flexibility . . . . .	.00
Verbal Originality . . . . .	.02
Verbal Total . . . . .	.04
Figural Fluency . . . . .	.13
Figural Flexibility . . . . .	-.03
Figural Originality . . . . .	.07
Figural Elaboration . . . . .	-.03
Figural Total . . . . .	.02



Analysis of the subsections of the TTCT produced data that are displayed in Table 4. The intercorrelations of measures on the Verbal section were all significant ( $p < .01$ ), while only five of the ten measures on the Figural section obtained a significant rho. For the intercorrelations of the Verbal and Figural tests, the originality measure and the total scores were the only significant correlations.

The last table is included in order to assess the amount of creative thinking, as measured by the TTCT, of males and females. The results from the t-tests indicate that there were no significant differences between the groups on any measure ( $p > .05$ ).

#### Discussion

The results from this study suggest that the TTCT is not a valid measure of creative thinking for college art majors. The fact that there were no significant correlations between the independent problem (work sample) and the scores on the standardized TTCT elicits many areas of question. Perhaps closer examination of the results will answer some of these questions.

The first point of consideration, as it was outlined in the introduction, is whether or not the TTCT possesses enough content validity to warrant its widespread use. The various professionals, who evaluated the test in its entirety, agree with the basic test design and offered only minor changes and criticisms.

TABLE 4

Intercorrelations of Measures Derived from Verbal Form A and  
Figural Form B of the Torrance Tests of Creative Thinking

Measures	Verbal Fluency	Verbal Flexi- bility	Verbal Origi- nality	Verbal Total	Figural Fluency	Figural Flexi- bility	Figural Origi- nality	Figural Elabora- tion	Figural Total
Verbal Fluency		.89**	.83**	.97**	.37	.32	.30	.32	.51**
Verbal Flexibility			.76**	.92**	.29	.30	.40	.25	.49**
Verbal Originality				.89**	.37	.28	.50**	.24	.53*
Verbal Total					.34	.27	.40	.27	.50**
Figural Fluency						.61*	.06	.21	.48**
Figural Flexibility							.17	.24	.56*
Figural Originality								.11	.60*
Figural Elabora- tion									.70*
Figural Total									

\*p<.05

\*\*p<.01

TABLE 5

Means, Standard Deviations, t Ratios of Differences in the  
Means for Male and Female College Art Students on  
Form A Verbal and Form B Figural for TTCT

	Verbal					Figural				
	Flu.	Flex.	Orig.	Total	Flu.	Flex.	Orig.	Elab.	Total	
Females										
Mean	81.83	44.50	59.67	185.45	12.83	11.89	30.78	53.61	109.33	
S. D.	28.87	13.67	18.29	57.87	5.98	5.61	11.99	17.07	27.93	
Males										
Mean	68.94	40.56	59.44	163.94	13.69	14.94	29.44	48.06	101.75	
S. D.	34.75	16.68	30.83	79.11	6.34	20.76	12.17	15.81	24.97	
t*	1.18	.75	.60	.91	.40	.60	.32	.97	.83	

\*t = 1.69

The data in Table 1 indicate there was fairly strong support for the tests. The judges, for the most part, saw the value of a multifaceted Verbal section and were interested in the various aspects of creative thinking that were tapped. In the Verbal section, the "just suppose" task was commended on its originality and creative insight by various judges. The "product improvement" task was also credited with positive comments and was assessed as a potential candidate for inclusion in other tests.

Concerning the overall aspects of the TTCT, two of the judges believed that the illustrations on the cover and in the body of the test were very elementary and may stifle creative responding instead of enhancing it. They also suggested that illustrations in the Figural section may "limit the size and quality of the response by placing boundaries on the task." Other criticisms dealt with the problem of translating a figural idea into a verbal answer. This task was questioned primarily because of the small degree of emphasis placed on verbal creative responding for art majors. One judge suggested that the Verbal section be shortened, placing greater emphasis on figural interpretation.

The Figural section met with very little criticism. All of the judges favored this section over the Verbal section. This favorable response was expected, since skills required in the Figural section most closely approximate those utilized by the judges in their art classes.

The judges' comments about the Figural section ranged from "very clever" to "that's acceptable." Various judges believed that the divergent thinking process of the student could be tapped by the unusual sequence of tasks. They also commented on the necessity of the student to "shift gears" to achieve successful performance.

Attention was also focused on the unstructured nature of the Figural tasks. The judges believed that there was a great deal of merit in providing minimal stimulus cues to the Ss. This represented, to the judges, a more flexible and amenable approach to test creative thinking. This is a good point and may be a potential parameter in future test construction.

Finally, the use of a brightly colored fluorescent stimulus received overwhelming support. This stimulus proved to be popular because it was so out of context with the rest of the test. The novelty impressed the judges.

In summary, the content validity for the TTCT was very strong. With the exception of a few constructive criticisms, the judges believed that the test would be a valid measure for creative thinking. They qualified this slightly, in that they believed the Figural part offered a better test of creative thinking, at least for art students.

The next logical question which has to be asked is why a test with such a favorable rating, as far as content validity is concerned, obtains such poor results when placed

in a concurrent validation study. It is this problem which will now be considered.

Since creativity is a multi-faceted construct, there are no limits to the permutations of variables that may exist in creative thinking. It is therefore likely that multiple types of creative thinking talent exist. It may even be that these components are linked to personality characteristics as well. Due to the complexity and vagueness of this construct, measurement of creativity faces a real challenge.

To better understand the concurrent validity of this study, it is important to look at why there was an insignificant relationship between the TTCT and the criterion. The first point which should be examined is the criterion. The results indicated that there was very little agreement between the seven judges in their ranking of the criterion. The criterion, which was really a work sample, offered the student an opportunity to be creative. Many students produced very creative products. Unfortunately, reliable assessment of the degree of creativity was not accomplished.

One reason may be that the judges, who were art professors, may have had various predetermined definitions of creativity. Because these judges have to constantly assess artistic talent, they undoubtedly have their own established standards which they utilize for this assessment. This presents the possibility that these judges were less susceptible

to Torrance's definition and scoring standards. This would mean that the criterion was not judged by a common standard, and would therefore account for the variability in ranking.

Another factor which may have created poor correlations between judges was that the criterion was only one problem. This may not have allowed for diverse sample of creative abilities to be tested. Future studies would probably be more successful if there were several criteria instead of one criterion.

Because only one judge had a significant intercorrelation with the other judges raises other questions. Perhaps the criterion, even though it was a work sample, allowed for too much freedom in responding, thereby creating too many ambiguities which were hard to assess objectively.

Another plausible assumption which can be inferred from this study and other studies is that the use of raters is not a very practical way of assessing the criterion. A number of studies which sought to use teacher and peer judgments as a means of assessing creativity (Holland, 59; Reid, King, & Wickwire, 59) have shown that they usually rate them on other variables, such as I.Q. or high achievement, instead of creative ability. These studies also found that there is considerable variability among teachers in their ability to rate pupils on a criterion, even when specific definitions are provided.

The final explanation which must be considered is that criterion was valid, but the poor results were the result of

an inherent discrepancy in the ratings of creativity by art professors. Further studies may want to explore this in greater depth.

The discussion of the major factor under examination is the degree of concurrent validity of TTCT. Table 3 provides the results for this validity. The data in Table 3 suggest that the TTCT does not provide valid measurement of creativity in adults, more specifically adult art majors. As was noted in the introduction, there have been very few validation studies of this test with adult samples. There have been no studies that tested adult art students, so presently this study stands by itself.

To explain these results, it is important to look at the factor of the educational background of the sample. The vast majority of validation studies of the TTCT have dealt with students, but none have been with art students. This difference in training could be a key explanation for the discrepancy and inadequacy of TTCT. Torrance (1963) criticizes the educational system for its emphasis on "memorization, learning solutions to problems that are already solved and other blocks which inhibit creative response [p. 10]." Art courses stress and emphasize the opposite of this. Perhaps a different kind of educational conditioning differentiates the non-art majors from the art major sample chosen in this study.



A second explanation lies in a methodological problem in this study. It is possible that because the criterion measure had such low interrater reliability, the probability of the TTCT correlation with it was very low. This interpretation is further supported by the fact that the various ranks were averaged before they were correlated with the TTCT, thereby creating an even less accurate measure of the actual ranks.

There are other factors which may have contributed to the results on Table 3. One is the inadequacy of measures in the TTCT. The data in Table 4 suggest that there were very strong intercorrelations between the measures on the Verbal section for fluency, flexibility, originality, and total. But the intercorrelations of the various measures on the Figural section were not as significant, especially originality, which did not have any significant intercorrelations with other Figural measures. This is important to note, especially for this particular validation study. Due to the type of criterion problem chosen, Figural originality, unfortunately, was a major factor for some judges in assessment of the criteria. Two judges confirmed this. The question now arises as to why the Figural-Originality measure did not correlate with the criterion. Since this measure was independent of the other measures and scored by a standard similar to the criterion's, it would be expected that it would correlate with the criterion, unless, in reality

there was no agreement between the two. This point is further supported by the fact that the intercorrelations between measures supplied by Torrance (1966) found significant intercorrelations on the Figural-Originality measure. This contradiction in data may indicate the inadequacy of the originality measure for this sample.

Realizing that the results were nonsignificant for concurrent validity, further analysis of the TTCT was carried out to determine if sex of the subjects had any bearing on the results. Torrance and Aliotto (1969) found data to support their hypothesis that, after the fourth grade, girls perform better than the boys on the Verbal forms. They also found that boys would surpass the girls on the Figural forms. These results do not agree with those found in the study at North Texas State University. As the data in Table 5 suggest, there were no significant  $t$ -ratio differences between males and females on any of the tasks. These data may be of significance if the disparate performance of the tests is substantiated. Apparently, a lower limit has been established for disparate performance between sexes but no upper limit has been obtained. The data in Table 4 suggest that college students may be the upper limit. Further research is needed to clarify this occurrence.

In summary, the results from this study suggest that although the TTCT possess a good amount of content validity they are not valid for use with adult art majors. The

results further suggest that a more definite criterion should be established, which would be easier to evaluate. Finally, it appears that for a college-age sample of art majors, there are no significant differences between male and female scores on the two sections (Verbal and Figural) of the Torrance Tests of Creative Thinking.

# Thinking Creatively With Words

By E. Paul Torrance

## Booklet A

Name \_\_\_\_\_ Age \_\_\_\_\_ Sex \_\_\_\_\_

School \_\_\_\_\_ Grade \_\_\_\_\_

City \_\_\_\_\_

Date \_\_\_\_\_



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## Activities 1-3: ASK-AND-GUESS

The first three activities will be based on the drawing below. These activities will give you a chance to see how good you are at asking questions to find out things that you don't know and in making guesses about possible causes and consequences of happenings. Look at the picture. What is happening? What can you tell for sure? What do you need to know to understand what is happening, what caused it to happen and what will be the result?



**Activity 1. ASKING.** On this page, write out all of the questions you can think of about the picture on the page opposite this one. Ask all of the questions you would need to ask to know for sure what is happening. Do not ask questions which can be answered just by looking at the drawing. You can continue to look back at the drawing as much as you want to.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
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22. \_\_\_\_\_
23. \_\_\_\_\_

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- 25. \_\_\_\_\_
- 26. \_\_\_\_\_
- 27. \_\_\_\_\_
- 28. \_\_\_\_\_
- 29. \_\_\_\_\_
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- 48. \_\_\_\_\_
- 49. \_\_\_\_\_
- 50. \_\_\_\_\_

**Activity 2. GUESSING CAUSES:** In the spaces below, list as many *possible* causes as you can of the action shown in the picture on page 2. You may use things that might have happened just before the things that are happening in the picture, or something that happened a long time ago that made these things happen. Make as many guesses as you can. Don't be afraid to guess.

1. \_\_\_\_\_

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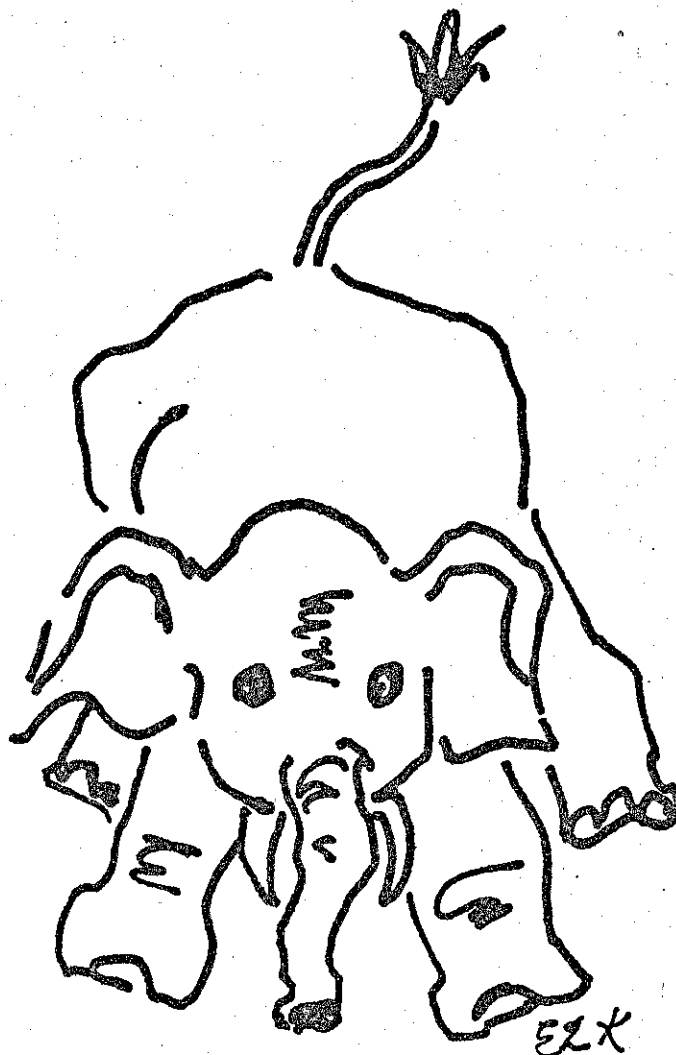
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**Activity 3. GUESSING CONSEQUENCES:** In the spaces below, list as many possibilities as you can of what might happen as a result of what is taking place in the picture on page 2. You may use things that might happen right afterwards or things that might happen as a result long afterwards in the future. Make as many guesses as you can. Don't be afraid to guess.

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## Activity 4: PRODUCT IMPROVEMENT

In the middle of this page is a sketch of a stuffed toy elephant of the kind you can buy in most dime stores for about one to two dollars. It is about six inches tall and weighs about a half pound. In the spaces on this page and the next one, list the cleverest, most interesting and unusual ways you can think of for changing this toy elephant so that children will have more fun playing with it. Do not worry about how much the change would cost. Think only about what would make it more fun to play with as a toy.



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**Activity 5: UNUSUAL USES (Cardboard Boxes)**

Most people throw their empty cardboard boxes away, but they have thousands of interesting and unusual uses. In the spaces below and on the next page, list as many of these interesting and unusual uses as you can think of. Do not limit yourself to any one size of box. You may use as many boxes as you like. Do not limit yourself to the uses you have seen or heard about; think about as many possible new uses as you can.

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### Activity 6: UNUSUAL QUESTIONS

In this activity, you are to think of as many questions as you can about cardboard boxes. These questions should lead to a variety of different answers and might arouse interest and curiosity in others concerning boxes. Try to think of questions about aspects of cardboard boxes which people do not usually think about.

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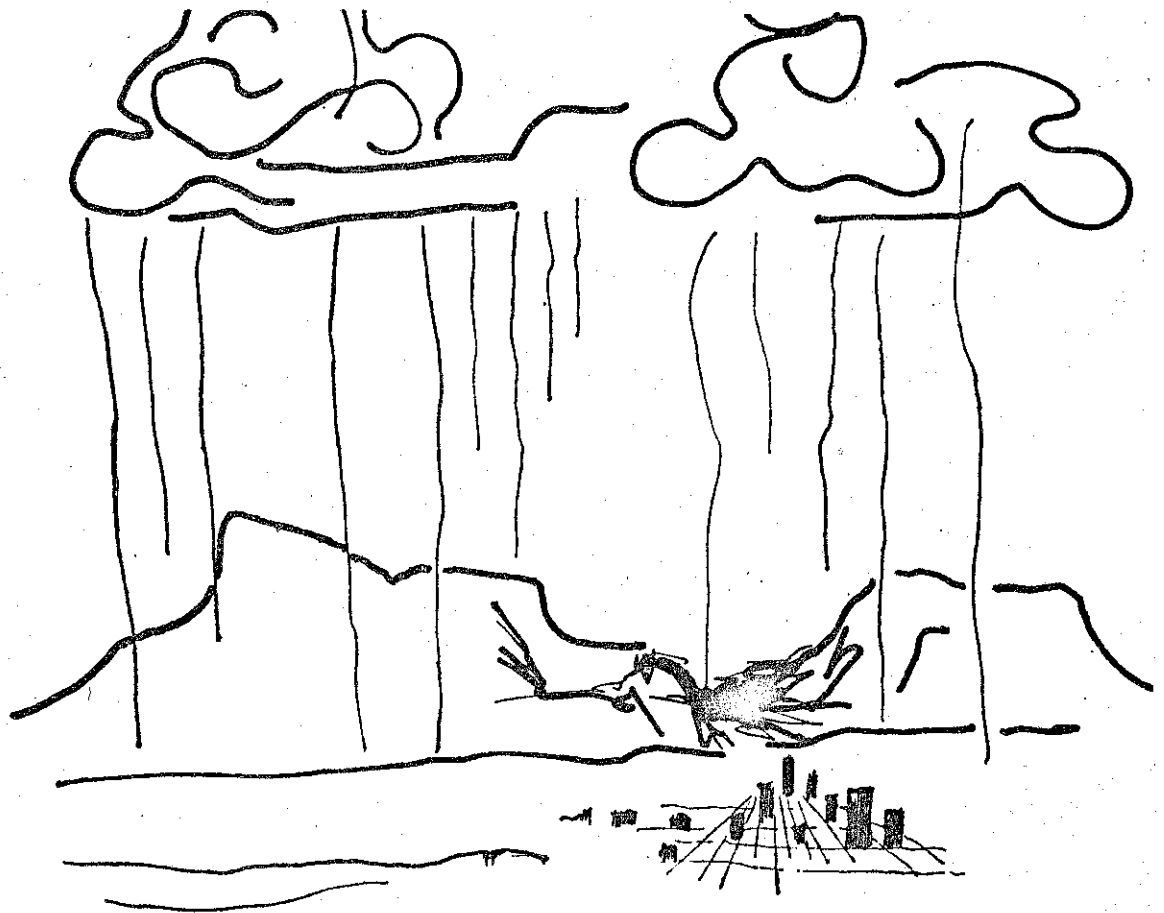


## Activity 7: JUST SUPPOSE

You will now be given an improbable situation—one that will probably never happen. You will have to *just suppose* that it has happened. This will give you a chance to use your imagination to think out all of the other exciting things that would happen IF this improbable situation were to come true.

In your imagination, *just suppose* that the situation described were to happen. THEN think of all of the other things that would happen because of it. In other words, what would be the consequences? Make as many guesses as you can.

The improbable situation—JUST SUPPOSE *clouds had strings attached to them which hang down to earth.* What would happen? List your ideas and guesses on the next page.



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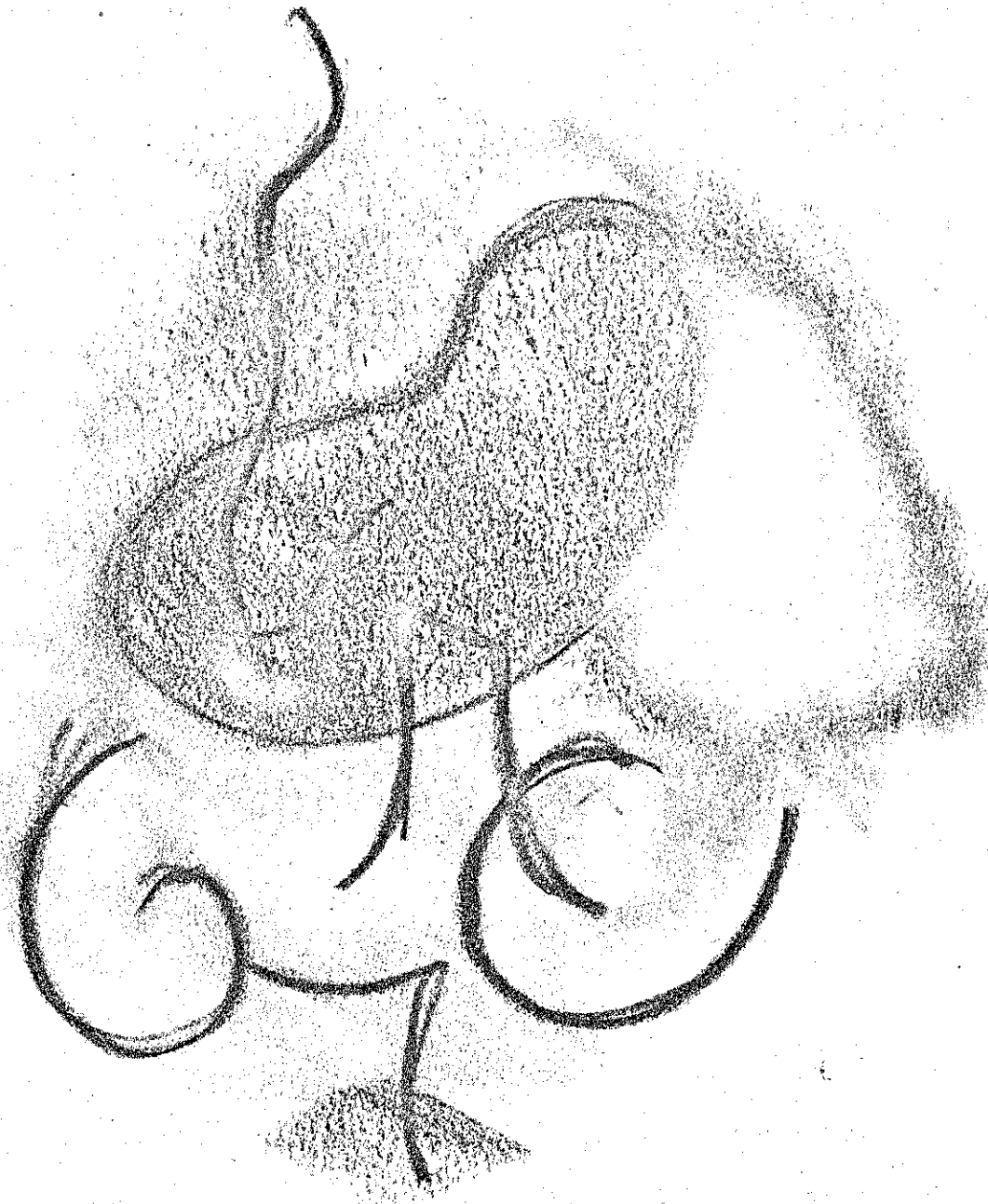
# Thinking Creatively With Pictures

By E. Paul Torrance

Booklet B

Name \_\_\_\_\_ Age \_\_\_\_\_ Sex \_\_\_\_\_ Grade \_\_\_\_\_

School \_\_\_\_\_ City \_\_\_\_\_ Date \_\_\_\_\_



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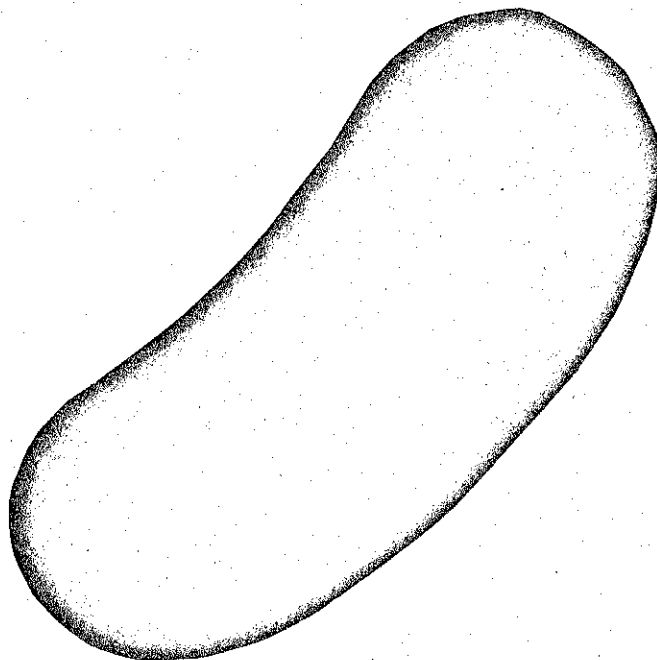
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### Activity 1. PICTURE CONSTRUCTION

Below is a piece of colored paper in the form of a curved shape. Think of a picture or an object which you can draw with this piece of paper as a part. On the back of these shapes you will find a thin layer of paper that can be peeled away. Look. Now you can stick your colored shape wherever you want it to make the picture you have in mind. Stick yours on the next page where you want it and press down on it. Then add lines with your pencil or crayon to make your picture.

Try to think of a picture that no one else will think of. Keep adding new ideas to your first idea to make it tell as interesting and as exciting a story as you can.

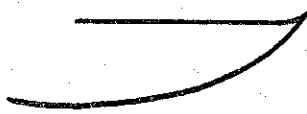
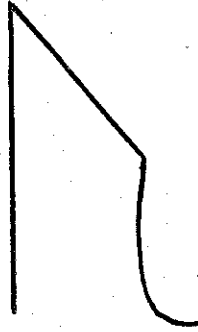
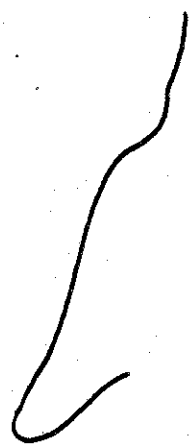

When you have completed your picture, think up a name or title for it and write it at the bottom of the page in the space provided. Make your title as clever and unusual as possible. Use it to help tell your story.

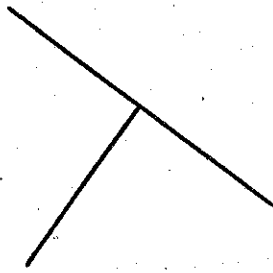


YOUR TITLE: \_\_\_\_\_

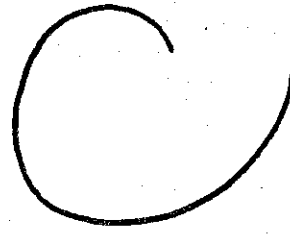
## Activity 2. PICTURE COMPLETION

By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.

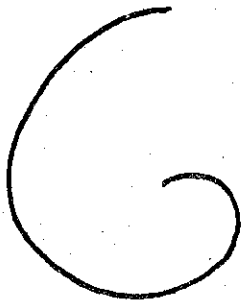
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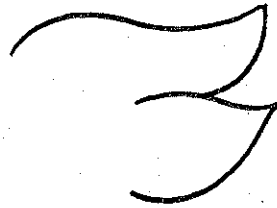
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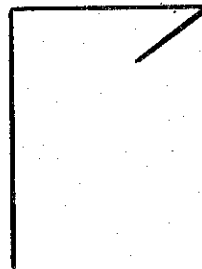
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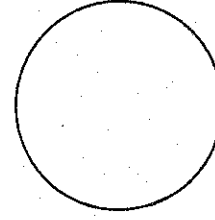
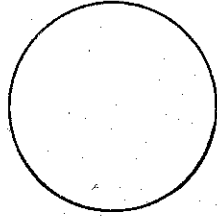
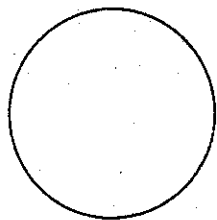
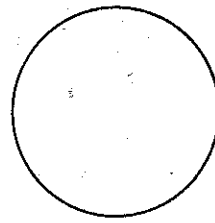
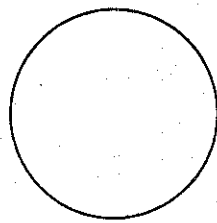
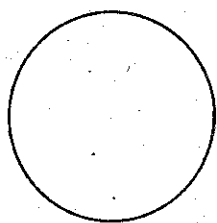
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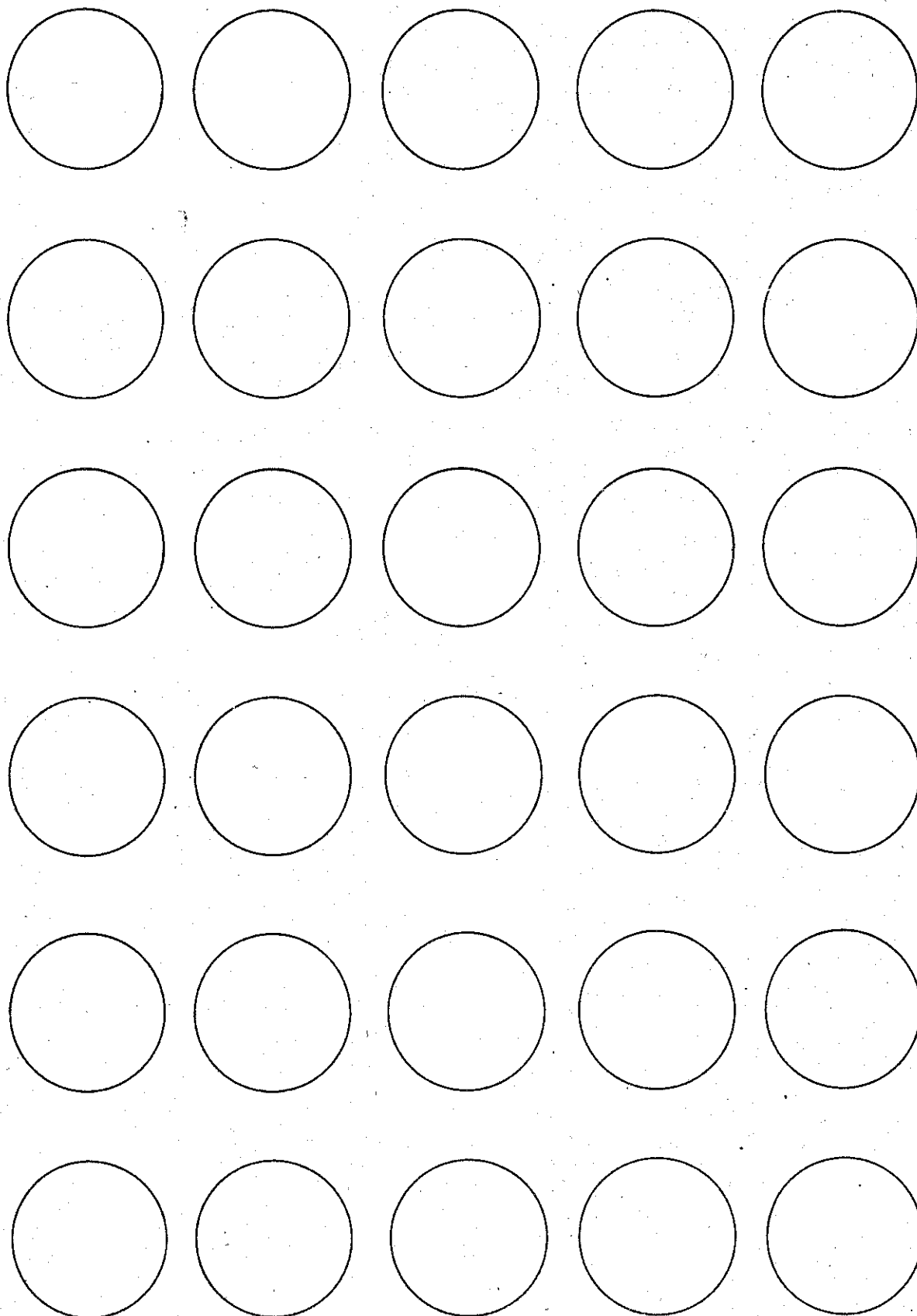
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## Activity 3. CIRCLES

In ten minutes see how many objects or pictures you can make from the circles below and on the next page. The circles should be the main part of whatever you make. With pencil or crayon add lines to the circles to complete your picture. You can place marks inside the circles, outside the circles, or both inside and outside the circles—wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles below the objects.







Appendix B

I HAVE ARRIVED WITH MY HAND-MADE BRACELET OF LIGHT. TOO MANY  
DARK HOLIDAYS ARE PRESENT. HELP!

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